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UNIVERSITY OF WYOMING COOPERATIVE RESEARCH REPORT
TO THE BUREAU OF LAND MANAGEMENT

ANNUAL PROGRESS REPORT
1981 RESULTS

VOLUME II
PRECIPITATION, PRODUCTIVITY, AND PRODUCTION SECTION

PHENOLOGY AND PRODUCTION STUDIES ON
SEMIARID SHRUB TYPES

SUBMITTED BY WYOMING AGRICULTURAL EXPERIMENT STATION

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PHENOLOGY AND PRODUCTION STUDIES ON
SEMI-ARID SHRUB TYPES[1]

ANNUAL PROGRESS REPORT - 1981 RESULTS

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VOLUME II:

PRECIPITATION, PRODUCTIVITY AND PRODUCTION SECTION

BY

H.G. Fisser, S.K. Dean, T.L. Deboodt, R.J. Kinucan,

and J.L. Mulholland

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SECTION III

PRECIPITATION PATTERN STUDY

1981

Introduction

During 1960 over 70 gauges were installed at 6 to 12 mile intervals throughout the Big Horn and Wind River Basins. Since that time approximately 20 gauges in the Big Horn Basin were discontinued but some additional 120 gauges have been installed, primarily by the BLM. The numbers of UW-BLM gauges and U.S. Weather service stations by county in the state that are reported in this project are presented below.

	UW-BLM		US Weather Service
Park	19		8
Big Horn	32		6
Washakie	27		4
Hot Springs	21		4
Fremont	42		12
Natrona	8		6
Carbon	13		5
Sweetwater	15		4
Sublette	4		4
Uinta	2		2
Lincoln	7		3
Total	190	+	58 = 248

The majority of the UW-BLM gauges are sheet metal cylinders, 12" in height and approximately 2.79" in diameter. Precipitation is read to inches of rainfall by measuring the water in ml. The gauge diameter allows one hundred ml of water to be equal to 1" of precipitation. In the Big Horn Basin the BLM utilizes a number of commercial gauges as well as the UW gauges, the latter which are available from the Division of Range Management at the University Wyoming in Laramie. Of the total 190 UW-BLM guages, 62 were read by the Division of Range Management and 128 by BLM personnel.

Seasonal dates for reading the gauges were established in 1960 based partially upon the traditional four seasons, occurrence of significant moisture periods, and average earliest and latest dates when roads would be passable. The dates selected were April 15, June 30, August 30, and October 15. The winter period thus extended from October 16 of the previous year to April 15, the spring period from April 16 to June 30, summer from July 1 to August 30, and fall from September 1 to October 15. In recent years precipitation recordings have been increased to monthly readings during the growing season (May-October) in the Big Horn Basin.

The UW has also established an additional gauge at each of the 12 exclosures where intensive phenology and productivity studies were conducted. These gauges were read approximately every two weeks during the growing season in conjunction with phenology and productivity measurements. They were established to provide a separate data set since frequent readings of a single gauge could easily result in an error. The data from the two gauges are being compared for any discrepancy that may arise from mishandling.

The total of 58 Weather Service Stations noted above, represents most, but not all, that are in operation in each county. Data from many recording stations is often difficult to obtain at the time of our report compilation. The Weather Service employs gauges with a larger orifice and are presumably most accurate. Long term records of the UW gauges and some of the BLM Taylor gauges however, show little difference except for snow that sometimes has not been recorded as accurately as with the larger recorders. The difference has seldom been as much as 10% of the total and thus is assumed to be negligible for general comparative purposes.

The total complement of 248 rain gauges distributed over the more xeric portions of western Wyoming provides a data set unequalled. This, combined with the long term herbage production records (obtained annually on some forty sites for as long as 21 years) and intensive phenology and productivity measurements (obtained at 12 locations for 10 years), provides a volume of data extremely useful for combined evaluation of precipitation dynamics with herbage production, plant development rates, and vegetation productivity.

1981 Results

Table I shows the 1981 precipitation data from the 190 gauges read by University of Wyoming and Bureau of Land Management personnel. In Table II the data of 58 U.S. Weather Service Stations are compiled in the same four time periods as those of Table I. Long term averages are presented in Table I but in Table II for the U.S. Weather Bureau Stations, the values under the heading LTA or Long Term Average for the most part represent 30 year standard normals established by the US Weather Service. Supplements A and B of Table II present additional information. Long term averages are given for a number of stations which have been in existence for less than 30 years. Values for 30 year long term averages for a few stations with a history of more than 30 years is also given.

Precipitation for 1981 in the Big Horn Basin was slightly greater than the long term average. Of the 96 gauges in the Big Horn Basin, 68 exhibited greater than average and 28 less than average precipitation. Park County was significantly drier than all other counties, receiving only 88.3% of normal precipitation. In Big Horn County, precipitation was 110.3% of normal, Washakie County 110.7% of normal, and at the southern part of the Big Horn Basin in Hot Springs County, recorded moisture was 118.3% of normal. Interestingly, during 1980, the geographic distribution of precipitation in the Big Horn Basin was reversed; Hot Springs County received the least amount of precipitation and the counties to the north received greater proportional amounts.

Although Park County received a very high proportion of total annual precipitation during the 1981 spring period (57.6%), significant moisture was also obtained during the fall and summer 13.8 and 16.3% of normal, respectively. Gauges of the other counties (Big Horn, Washakie, Hot

Springs) received less precipitation during spring than those of Park County, but the summer and fall precipitation amounts were essentially equal at slightly over 1" per period. Table II shows that the average precipitation for 1981 from the 22 US Weather Service Stations in the Big Horn Basin was 10.15 inches, about half an inch greater than the long-term average which resulted in a 1981 total of 105.0% of normal.

In Fremont County average total annual precipitation was 9.11 inches from 42 UW-BLM gauges. This was 108.2% of normal. To the east, in Natrona County, total average precipitation from 8 gauges was 9.92 inches, 109.2% of normal. During 1981 the BLM installed 12 new rain gauges in Fremont County to better assist with their management operations. Two of these are being read by the University and the others by BLM personnel.

The US Weather Service Stations in the Wind River Drainage have many locations at high elevations in the mountains to the south. Those gauges, as indicated in Table II, were found to have received only 90.2% of the normal precipitation, while the 9 gauges which were located throughout the central and northern xeric area of the Wind River Drainage were found to have received 97.6% of normal precipitation. Average precipitation in the northern xeric areas was 8.8 inches, compared to an average of 11.15 inches for the southern unit. The overall weighted average annual precipitation (based on 13 gauges) of the US Weather Service Stations in the Wind River Basin, with 13 gauges reported, was 94.2% of normal. This was significantly different from the UW/BLM recordings, but can be attributed to the locations of the gauges and the fact that the areas where the weather service gauges were located did not, in fact, receive as much precipitation as those where UW/BLM gauges were located.

In Carbon County, at 13 UW-BLM gauges located south of Highway 80, and essentially southwest of Rawlins, an average of 12.55 inches precipitation was recorded, a surprising increase of 3.33 inches above the overall long term average of 9.22 inches. These values resulted in a 1981 average total precipitation of 136.1% of normal. All 13 gauges within Carbon County received greater than normal precipitation. The US Weather Service Stations found in central and southeast Wyoming, which includes parts of Fremont, Natrona, and Carbon Counties received 114.0% of normal for a total of 12.74 inches of rainfall. Average precipitation by county of the UW/BLM gauges was slightly less than that recorded at the Weather Service Stations and again is attributed to the fact that many of the weather service stations were located in areas of higher elevation and greater precipitation which did not proportionately represent the more arid areas of each region.

To the west in Sweetwater County, the average annual precipitation of UW-BLM gauges was 9.01 inches, 111.5% of normal, almost an inch greater than the long term average. In Sublette County precipitation was 109.1% of normal, where an average of 7.33 inches was recorded at 4 UW-BLM gauges. In the two far western counties in which the University and BLM record precipitation, however, snow and rain were much below normal. Uinta County received a 1981 annual average of 6.00 inches of moisture from two gauges, only 75.6% of normal. In Lincoln county precipitation was only 75.4% of normal, with an average of 7.68 inches of rainfall, which was 2½ inches less than average of the 7 gauges recorded.

Within the Green River Drainage, including the entire US Weather Service Station series from the area just west of Rawlins and beginning with rain gauge readings at Wamsutter, the precipitation was 8.4", approximately 7% less than normal, compared to the long term standard normal of 9.03 inches for the total of 14 gauges. With great similarity to the data from gauges read by the UW/BLM group, precipitation of the US Weather Service Stations at the eastern and southern locations was significantly above the standard normals, while the gauges to the far west, essentially in Uinta and Lincoln Counties, were all significantly below the standard normals.

In Table III precipitation seasonal distribution of all the UW/BLM gauges and US Weather Stations are shown by county, basin, and drainage. This information is simply a recompilation of those from Tables I and II and are presented for ease of comparison. The total annual precipitation of the 190 UW-BLM gauges was 9.47 inches, 109.1% of normal, while that of the Weather Service Stations was 108.6% of normal, with an average of 9.62 inches.

In Table IV precipitation values in the Big Horn Basin are presented by reading date, which involves the two extra recording dates of June 1 and August 1 during the summer period of 1981. The long term averages of the 96 gauges of the Big Horn Basin are indicated in like foremat as they were also compiled in Table I. This table shows that the average precipitation of all 96 gauges was 9.59 inches, which resulted in precipitation that was 106.6% of normal.

In Table V data are shown describing the precipitation amounts and distribution for three vegetation types within the Big Horn Basin perimeter. These gauges are read by University personnel. The table was established initially as a student exercise to study precipitation relationships of the vegetation types in the area, the juniper woodland, sagebrush-grasslands and the desert shrubland. The precipitation of the juniper woodlands was 106.8% of normal at 13.56 inches. The precipitation of the sagebrush-grasslands area was at 110.8% of normal, with a total annual average of 12.01 inches, while the desert shrubland rain gauges were 116.4% of normal, with an average of 7.79 for the year. The overall average of these gauges was 11.33

inches, which was about an inch greater than the long term average and resulted in an overall 109.9% of normal precipitation.

Precipitation values from US Weather Service Stations in Table VI are grouped by counties of the Big Horn Basin. The data are compiled with total recorded moisture for the long term traditional seasons.

Precipitation of the UW-BLM gauges is compared in Table VII to the US Weather Service gauges. These are also a recompilation of the various rain gauges and the general regions of the state and are utilized to examine the relationships of the data received from the UW-BLM gauges to that of the US Weather Service gauges.

In general, the precipitation during 1981 was about 10% greater than normal. Significant patterns of differences in amounts of precipitation were noted in the Big Horn Basin. The northern area in Park County received considerably less than normal, but other counties of the Big Horn Basin to the south received greater and greater increases with distance southward. Fremont and Natrona Counties were similar to those of the Hot Springs-Washakie County area, while Carbon County exhibited a surprising 36% greater than normal precipitation for the year. Westward and in the southern portion of the state, precipitation was somewhat greater throughout the Sweetwater-Sublette County areas, but was significantly less than average in the Uinta and Lincoln County areas.

Precipitation patterns among seasons have been presented, but discussed little. It may be noted that the central and northcentral portions of the state typically receive from 45-50% of precipitation during the spring period from April 15 to July 1, while in the southern and far western areas of the state, precipitation distribution usually exhibits a greater proportion of winter precipitation and comparatively large summer and fall precipitation values. As a result spring period growing season precipitation in those areas is generally reduced to 30-35% of total annual moisture. These data have really not been investigated in detail, but future analysis by computer processing should be able to exhibit significant differences that may occur. The relationships that these precipitation differences may have with the general kinds of vegetation types may be closely associated with type differentiation as well as herbage productive potential differences.

On Table VIII the newly completed sector maps are listed by number, name and legal description. The 21 sector maps cover all the area of Wyoming within which are all rain gauges reported in Tables I and II of this report. Figure I is a map of Wyoming which serves as an index of the locations of the sector maps, which follow in numerical order.

TABLE I. Precipitation data for 1981 from University of Wyoming gauges for the periods October 15-April 15 (winter), April 15-July 1 (spring), July 1-September (summer) and September 1-October 15 (fall).

Rain Gauge No.	Range Gauge Name	Winter April 15 1981	Spring July 1 1981	Summer Sept. 1 1981	Fall Oct. 15 1981	Total 1981	Diff. From Long Term	Long Term Average	No. of Years
Park County									
207	Beaver Slide BLM 7	E2.22	5.54	E1.13	.71	E9.60	-	11.58	4
147	Big Sage Exc.	1.13	5.15	.25	.58	7.11	-	8.06	13
261	Big Sand Coulee TG	.75	4.17	.93	.48	6.33	-	8.72	2
146	Big Sky Exc.	1.38	4.20	.66	.60	6.84	-	8.60	13
100	Buffalo Basin Exc.	2.46	5.18	2.96	.69	11.29	+	10.22	15
193	Canyon	2.63	4.46	1.16	.39	8.64	-	9.00	9
232	Coal Creek TG	1.22	5.28	.87	.42	7.79	-	9.14	2
259	Cottonwood Creek TG	.80	4.96	.59	.40	6.75	-	7.64	2
266	Garland Oil Field TG	.60	3.99	.66	.28	5.53	-	6.08	2
145	Hilltop Springs	6.10	5.99	.70	.85	13.64	-	14.60	11
184	Little Dry Creek	1.22	5.40	1.72	.52	8.86	+	8.48	7
260	Little Sand Coulee TG	1.45	4.75	1.05	.38	7.63	-	8.84	2
263	Oregon Basin TG	1.67	3.81	.44	.20	6.12	-	8.58	2
262	Pole Cat Bench TG	.85	1.96	.60	.37	3.78	-	6.24	2
257	Short Fk.Meeteet.Cr. TG	E2.50	4.47	1.23	.45	E8.65	-	12.82	2
192	Skyline	2.91	4.37	1.29	.28	8.85	+	8.22	8
206	Squaw Teats BLM 6	1.31	3.97	2.05	.73	8.06	+	7.78	4
191	State Line	.98	4.70	1.11	.43	7.22	+	6.40	8
264	Y U Bench TG	.75	2.66	1.04	.50	4.95	-	6.16	2
	Mean n = 19	1.73	4.47	1.08	.49	7.77	(-1.03)*	8.80	
	Percent by Season	22.3%	57.6%	13.8%	6.3%	100.0%			
							-14		
			1981 Total average is 88.3% of Normal				+5		

BLM = Gauge Series Numbers Grass Creek Resource Area
WRA = Gauge Series Numbers Washakie Resource Area
TG = Taylor Gauge by BLM
UW = University of Wyoming Gauge
E = Estimate based on nearby station
S = Seasonal estimation from late read gauge
SE = Estimate based partially on late read gauge and partially on nearby station
* = Difference of average annual for all gauges in 1981 from long term average

TABLE I. (Continued)

Rain Gauge No.	Range Gauge Name	Winter April 15 1981	Spring July 1 1981	Summer Sept. 1 1981	Fall Oct. 15 1981	Total 1981	Diff. From Long Term	Long Term Average	No. of Years
Big Horn County									
176	Basin Flats Exc. UW	2.04	3.86	2.92	1.20	10.02	+	7.13	15
256	Beaver Creek TG	2.05	5.30	2.58	1.40	11.33	+	9.76	2
123	Big Flat Exc. UW	1.94	3.65	2.04	1.07	8.70	+	6.37	14
219	Blue Ridge WRA 3	1.20	3.25	3.65	1.40	9.50	+	7.57	3
220	Cedar Mountain WRA 4	2.10	5.20	.50	1.55	9.35	+	9.23	3
208	Dead Indian BLM 8	1.29	3.61	.65	.52	6.07	-	6.30	4
212a	Dorsey Creek BLM 12	1.61	3.65	.48	.58	6.32	-	6.84	4
212b	Dorsey Creek UW	1.58	3.48	.33	.49	5.88	-	6.31	4
269	Dry Creek TG	.90	2.20	2.75	.70	6.55	-	6.80	2
211	Elk Creek BLM 11	1.50	1.56	.87	.70	4.63	-	5.85	4
194	Emblem Bench TG	.60	3.36	.64	.60	5.20	+	5.05	4
24	Halogeton Exc. #1 UW	1.04	3.24	.41	1.48	6.17	+	5.47	22
167	Halogeton Exc. #2 UW	1.26	3.48	.38	1.57	6.69	+	6.04	10
168	Halogeton Exc. #3 UW	.96	3.28	.32	1.52	6.08	+	5.61	10
12	Horse Creek Exc. UW	3.08	5.65	1.84	1.75	12.32	+	11.11	22
113	Horse Haven Exc. UW	E2.00	4.13	3.32	1.15	E10.60	+	7.06	15
21	Kane Deer Exc. UW	2.84	8.50	1.58	2.33	15.25	+	11.99	17
149	Kane GRI Exc. UW	2.65	8.31	1.42	2.34	14.72	+	12.46	14
116	Kane Seed Exc. UW	1.11	4.93	.57	1.98	8.59	+	7.01	14
271	Kane Seed Exc. TG	.75	4.79	.56	.95	7.05	-	7.15	2
268	Little Dry Creek TG	.70	2.95	3.70	.55	7.90	-	8.15	2
224	Luman Creek WRA 5	2.95	7.30	.95	2.45	13.65	+	12.21	3
148	Medicine Lodge GRI Exc. UW	4.60	6.62	1.10	2.20	14.52	+	14.21	14
267	North Cowley TG	1.05	3.92	.58	.45	6.00	-	6.85	2
270	North Shell Allotment TG	1.35	3.97	1.14	1.35	7.81	+	7.53	2
175	Potato Ridge Exc.(EULA) UW	2.34	4.29	1.24	1.64	9.51	+	8.17	14
225	Potato Ridge Exc. WRA1	1.30	4.20	1.15	1.55	8.20	+	7.49	3
23	Sheep Springs Exc. UW	4.16	7.00	2.09	2.30	15.55	+	13.91	21
227	Sheep Springs Exc. WRA 2	2.55	6.00	2.05	2.20	12.80	+	11.89	3
174	Sheldon Gulch Exc.(ATGA)UW	2.41	4.27	1.33	1.69	9.70	+	7.82	14
265	Whistle Creek TG	1.15	E2.10	.30	.30	E3.85	-	5.49	2
	Mean, n = 32	1.90	4.44	1.39	1.35	9.08	(+.85)*	8.23	
	Percent by Season	20.9%	48.9%	15.3%	14.9%	100.0%			
							-9		
							+23		

1981 Total average is 110.3% of Normal

TABLE I. (Continued)

Rain Gauge No.	Range Gauge Name	Winter April 15 1981	Spring July 1 1981	Summer Sept. 1 1981	Fall Oct. 15 1981	Total 1981	Diff. From Long Term	Long Term Average	No. of Years
Washakie County									
1	Ant Hill Worland	E2.25	3.66	.99	1.04	E7.94	+	6.49	22
150	Big Trails GRI Exc.	4.29	4.64	2.29	1.30	12.52	-	12.98	14
41	Bud Kimball Exc.	2.04	4.00	1.05	1.25	8.34	-	9.25	20
7	Buffalo, Creek Exc.	2.97	4.05	1.35	1.05	9.42	-	10.30	19
17	Burnt Wagon Exc.	1.48	4.16	.34	.76	6.74	+	6.14	20
179	Chalk Exc.	1.40	3.75	.77	1.04	6.96	+	6.30	21
222	Cornell Gulch WRA10	1.70	4.10	1.50	1.20	8.50	+	7.40	3
221	Cottonwood Oil Field WRA6	.85	3.25	1.20	.95	6.25	+	5.80	3
8	Demer Exc.	3.82	4.15	1.05	1.05	10.07	+	8.54	22
4	Dutch Nick Flat Exc.	2.09	4.73	.89	.80	8.51	+	7.19	21
199	East Ridge Exc.(see RG 206)	1.31	3.97	2.05	.73	8.06	+	7.78	4
15	15 Mile Pastures = RG 179	1.40	3.75	.77	1.04	6.96	+	6.30	21
177	Hawk Exc.	1.75	4.15	.31	.75	6.96	+	6.15	20
166	Mills Burn	4.29	5.01	2.23	1.38	12.91	+	12.56	11
185	Rice Burn Exc.	4.13	6.21	1.60	1.83	13.77	+	13.77	8
180	Sand Creek Exc.	2.25	4.25	.91	1.32	8.73	+	6.82	15
226	Sand Draw WRA 8	3.25	4.65	1.15	1.10	10.15	+	8.00	3
209	Schuster Draw BLM 9	2.90	3.19	1.84	1.00	8.93	+	7.67	4
36	Smilo Exc.	3.82	4.81	2.93	1.03	12.59	+	9.24	21
210	So.Fk.15 Mile Cr. BLM 10	2.24	3.57	2.15	.80	8.76	+	8.43	4
203	Spring Creek BLM 3	1.42	3.48	1.02	1.18	7.10	+	6.46	4
228	Spring Creek Rd. WRA 7	4.30	4.25	1.90	1.75	12.20	+	10.49	3
181	Tolman Ridge Exc.	2.48	4.44	.73	1.23	8.88	+	6.56	15
39	Two Mile Hill Exc.	3.36	4.00	1.95	1.25	10.56	+	9.52	21
13	West Pasture Exc.	1.20	3.97	.30	.44	5.91	+	5.72	20
178	Willwood Exc.	1.51	3.61	.70	1.09	6.91	+	6.20	21
115	Worland Cattle Co. Exc.	3.25	3.05	1.60	1.25	9.15	+	8.31	14
	Mean, n = 27	$\bar{X}$ 2.51	4.10	1.32	1.10	9.03	(+.87)*	8.16	
	Percent by Season	% 27.8%	45.4%	14.6%	12.2%	100.0%			
							- 3		
			1981 Total average is 110.7% of Normal				+24		

TABLE I. (Continued)

Rain Gauge No.	Range Gauge Name	Winter April 15 1981	Spring July 1 1981	Summer Sept. 1 1981	Fall Oct. 15 1981	Total 1981	Diff. From Long Term	Long Term Average	No. of Years
Hot Springs County									
117	Big Bend Exc.	3.96	4.30	1.25	1.00	10.51	+	10.32	14
76	Cochran Exc.	4.34	4.70	1.70	1.30	12.04	+	10.32	21
231	Egbert Draw BLM 16	6.00	6.70	4.00	1.15	17.85			1
77	Kirby Creek Exc.	4.76	5.05	2.30	1.30	13.41	+	9.86	19
223	Kirby Creek WRA 9	3.95	4.95	1.65	1.35	11.90	+	9.54	3
258	Lime Ridge BLM 17	E4.00	5.65	2.67	.75	E13.07			1
111	Lower Enos Creek Exc.	3.70	6.05	2.72	.88	13.35	+	11.09	14
205a	Murphy Draw BLM 5	.93	4.32	1.30	.80	7.35	-	7.44	4
205b	Murphy Draw UW								
183	North Butte Thermop.Relic	4.63	6.92	1.35	1.17	14.07	+	10.98	10
215	O.B. Resevoir BLM 15	3.45	6.06	2.76	.75	13.02	+	12.28	4
202a	Prospect Creek BLM 2	2.15	4.70	3.05	.75	10.65	+	9.93	4
202b	Prospect Creek UW								
204a	Grass Cr. BLM 4(Rankin)	2.30	5.15	1.70	1.07	10.22	+	9.40	4
204b	Rankin Basin Exc. UW	2.31	5.36	1.61	.99	10.27	+	9.87	4
204c	Rankin Basin Exc. UW L	2.00	5.61	1.70	1.32	10.63	-	10.99	4
233	Rock Creek BLM 18	SE2.75	6.85	3.29	1.25	SE14.14			1
182	Round Top Mtn. Relic	5.83	6.37	1.47	1.02	14.69	+	11.90	10
75	Sand Gulch Exc.	3.88	4.15	2.00	1.25	11.28	+	9.02	20
214	Twenty one Creek BLM 14	2.86	6.73	3.30	1.18	14.07	+	12.44	4
22	Upper Enos Creek Exc.	5.45	6.77	2.21	1.47	15.90	+	15.06	13
213	Wagonhound BLM 13	2.19	4.90	2.80	.75	10.64	+	9.14	4
201	Waugh Dome BLM 1	2.53	4.45	4.42	1.45	12.85	+	10.11	4
	Mean n = 21	3.52	5.51	2.35	1.09	12.47	(+1.93)*	10.54[1]	
	Percent by Season	28.2%	44.2%	18.9%	8.7%	100.0%			
							- 2		
			1981 Total average is 118.3% of Normal				+16		

[1] n = 18

SE = Separation by Estimate

TABLE I. (Continued)

Rain Gauge No.	Range Gauge Name	Winter April 15 1981	Spring July 1 1981	Summer Sept. 1 1981	Fall Oct. 15 1981	Total 1981	Diff. From Long Term	Long Term Average	No. of Years
Fremont County									
52	Alkali Flats	1.98	3.48	1.19	1.30	7.95	-	8.46	21
242	Birdseye Pass			Instal.	.92				
89	Birdseye Ranch	1.91	4.30	1.44	.81	8.46	+	7.84	18
10	Boysen Resevoir Exc.	1.63	3.91	1.41	.72	7.67	+	5.12	22
85	Bridger Creek Ranch	4.38	5.61	1.54	1.09	12.62	+	11.31	19
241	Buffalo Creek			Instal.	1.08				
49	Canyon Creek	2.72	3.80	2.19	1.18	9.89	+	8.53	20
59	Carter Divide Exc.	1.60	4.94	1.47	.98	8.99	+	8.31	20
88	Comet Mine	S4.00	S4.92	S1.60	1.32	S11.84	+	11.75	19
243	Cottonwood Pass			Instal.	.98				
60	Dishpan Butte #1 Exc.	3.05	4.94	1.67	1.16	10.82	-	11.23	20
61	Dishpan Butte #2 Exc.	2.52	4.70	1.54	1.03	9.79	+	9.35	20
229	Divide Study Plot # 3 Exc.	2.20	4.76	1.55	.96	9.47	+	7.92	3
86	Dry Creek	1.22	4.50	.94	E.90	E7.56	+	6.99	21
58	Empty Cartridge Exc.	2.78	4.88	1.26	1.25	10.17	+	8.23	16
55	Fraser Seed Plot	1.64	4.67	1.22	1.74	9.27	+	8.90	19
67	Frenchie #9 (Madden)	1.76	2.75	1.46	1.10	7.07	-	9.09	20
48	Fuller Seed Plot	2.26	4.91	1.28	1.34	9.79	+	8.18	20
46	Gibbs Butte	1.62	E4.10	1.84	.86	E8.42	+	6.83	21
6	Granite Mountain Exc.	2.46	4.82	1.61	1.44	10.33	+	8.75	19
239	Greasewood Draw			Instal.	.36				
238	Green Mountain			Instal.	1.85				
62	Hall Creek Divide Exc.	4.19	4.50	1.95	1.05	11.69	-	11.73	20
87	Hoodoo Creek	2.24	E4.25	1.39	.86	E8.74	+	6.58	21
64	Hudson	3.35	3.85	1.95	.62	9.77	+	9.33	20
68	Johnson	1.26	2.35	3.45	E1.25	E8.31	+	7.17	19
236	Ladysmith Draw Bison basin			Instal.	1.18				
5	Lander Ant Exc.	2.52	4.25	1.16	.96	8.89	+	8.52	21
63	Little Popo Agie	4.00	4.14	1.72	.75	10.61	-	11.12	20
56	Logan #1 Exc.	1.87	5.24	.91	1.02	9.04	+	8.61	20
57	Logan #2 Exc.	1.87	4.87	2.02	1.26	10.02	+	8.35	19
237	Lost Creek Resevoir			Instal.	.91				
16	Lower Gov't. Draw # 2 Exc.	2.52	4.20	1.32	.93	8.97	-	10.22	21
81	Mack Ranch	2.88	4.75	2.03	.98	10.64	+	8.88	17
14	McGraw Flat Exc.	2.64	4.64	1.01	1.00	9.29	-	9.57	21

TABLE I. (Continued)

Rain Gauge No.	Range Gauge Name	Winter April 15 1981	Spring July 1 1981	Summer Sept. 1 1981	Fall Oct. 15 1981	Total 1981	Diff. From Long Term	Long Term Average	No. of Years
Fremont County (Continued)									
240	McIntosh Meadows			Instal.	.77				
47	Muskrat Creek	E2.00	4.12	1.00	1.24	E8.36	+	7.18	19
50	Muskrat #5 Exc.	2.20	3.35	.87	.80	7.22	-	8.38	20
252	Palmer Draw			Instal.	1.77				
235	Picket Lake			Instal.	.70				
51	Poison Creek	1.54	4.96	1.09	1.22	8.81	+	7.90	19
80	Poison Draw	1.04	2.91	.93	.94	5.82	-	6.96	21
244	Quien Sabe Ranch			Instal.	.74				
65	Sand Draw (Pan Am)	2.27	4.10	.85	.88	8.10	-	8.81	18
169	Shoshoni Ant #2 Exc.	2.80	S4.88	S1.00	1.36	10.04	+	8.32	10
170	Shoshone Ant # 4 Exc.	2.52	4.98	.83	1.33	9.66	+	8.04	10
158	Shoshone Ant # 7 Exc.	2.56	5.45	1.55	1.34	10.90	+	8.44	11
172	Shoshoni Ant # 8 Exc.	2.54	5.32	1.19	1.39	10.44	+	8.30	10
171	Shoshoni Ant # 9 Exc.	2.46	5.42	1.01	1.32	10.21	+	8.34	10
173	Shoshoni Ant # 11 Exc.	2.44	5.08	.74	1.24	9.50	+	8.20	10
234	Strawberry Creek			Instal.	1.12				
11	Sweetwater Exc.	2.74	E2.85	1.39	1.08	8.06	-	8.84	21
9	Upper Gov't. Draw Exc. #1	3.28	3.94	1.30	.90	9.42	+	9.26	22
	Mean, n = 42	2.37	4.29	1.38	1.07	9.11	(+.69)*	8.42	
	Percent by Season	26.0%	47.1%	15.1%	11.8%	100.0%	12-		
			1981 Total average is 108.2% of Normal				30+		
Natrona County									
143	Arminto	2.97	3.52	1.76	.70	8.95	+	8.64	14
109	Bolton Creek Exc.	Discontinued							
141	Donlin Exc.	2.69	3.41	2.54	.64	9.28	+	7.27	14
110	EK Exclosure	2.97	3.52	1.76	.70	8.95	+	8.64	14
142	Merino Exc.	4.29	3.18	1.67	.36	9.50	+	8.98	14
108	Mud Springs Exc.	5.82	3.64	3.82	.79	14.07	+	11.16	14
107	Owl Draw Exc.	3.43	3.92	2.02	.64	10.01	+	9.66	15
144	Poison Spider Exc.	3.23	3.18	1.23	.62	8.26	-	9.01	14
106	Stinking Creek Exc.	E3.25	3.41	3.00	.69	E10.35	+	9.31	15
	Mean, n = 8	3.58	3.47	2.23	.64	9.92	(+.84)*	9.08	
	Percent by Season	36.1%	35.0%	22.5%	6.4%	100.0%			
							-1		
			1981 Total average is 109.2% of Normal				+7		

TABLE I. (Continued)

Rain Gauge No.	Range Gauge Name	Winter April 15 1981	Spring July 1 1981	Summer Sept. 1 1981	Fall Oct. 15 1981	Total 1981	Diff. From Long Term	Long Term Average	No. of Years
Carbon County									
186	Flat Top	4.33	4.24	1.72	3.30	13.59	+	9.26	9
27	Little Robber #5 Exc.	3.61	4.43	1.53	3.70	13.27	+	9.73	19
128	Oppenheimer Exc. #1	3.90	4.41	1.09	3.69	13.09	+	9.90	14
124	Poison Butte Exc.#1 ARTR	4.48	5.14	2.80	3.70	16.12	+	11.06	14
125	Poison Butte Exc.#2 JUOS	3.89	4.65	1.88	E3.50	13.92	+	11.24	14
139	Powder Rim A Exc.#1** ARTR	5.02	4.13	1.15	3.05	13.35	+	9.59	14
136	Powder Rim B Exc.#1**	4.33	4.30	.70	3.20	12.53	+	8.89	14
137	Powder Rim B Exc.#2** JUOS	5.90	4.02	1.20	3.00	14.12	+	10.57	14
130	Powder Rim C Exc.#1	3.92	3.89	1.35	3.02	12.18	+	8.66	14
131	Powder Rim D Exc.#1**	3.71	3.78	.77	3.50	11.76	+	7.94	14
26	Red Wash #1 Exc. ATGA	2.64	3.38	1.47	2.40	9.89	+	7.97	20
28	Red Wash #2 Exc.* ARTR	2.46	2.34	1.73	2.35	8.88	+	7.11	20
25	Red Wash #3 Exc. Mixed	2.68	2.99	2.49	2.29	10.45	+	8.01	20
	Mean, n = 13	3.91	3.98	1.53	3.13	12.55	(+3.33)*	9.22	
	Percent by Season	31.2%	31.7%	12.2%	24.9%	100.0%			
							- 0		
			1981 Total average is 136.1% of Normal				+13		

**Geographically in Sweetwater County but physiographically in Carbon County

Rain Gauge No.	Range Gauge Name	Winter April 15 1981	Spring July 1 1981	Summer Sept. 1 1981	Fall Oct. 15 1981	Total 1981	Diff. From Long Term	Long Term Average	No. of Years
Sweetwater County									
157	Bar X Ranch	2.31	3.90	1.05	1.73	8.99	+	6.91	12
217	Big Hollow Bench Exc.	3.57	2.55	E.85	1.30	E8.27	-	8.34	4
20	Black Mountain Exc.	2.51	3.56	.46	1.70	8.23	+	7.53	19
30	Boars Tusk Exc.	2.72	2.80	.84	2.18	8.54	+	7.79	15
18	Cedar Mountain Exc.	3.29	2.87	.40	1.61	8.17	-	8.24	19
102	Chandler-Simpson Well	2.50	3.00	.70	1.20				
197	Costello Creek	3.16	4.00	1.59	2.65	11.40	+	10.69	10
103	Daley Hay Corral	2.33	E3.00	.34	1.40	E7.07	-	7.28	15
2	Farson Exc.	2.43	2.50	.79	1.29	7.01	+	6.62	16
104	J. O. Headquarters	3.17	5.10	.94	1.46	10.67	+	8.03	16
105	Len Hay Corral	1.55	3.80	E1.00	E1.50	E7.85	+	6.99	15
218	North Rim Exc.	4.19	3.95	1.09	1.85	11.08	+	8.88	4
195	Parting of Ways Exc.	2.08	3.80	.72	1.90	8.50	+	7.62	4

TABLE I. (Continued)

Rain Gauge No.	Range Gauge Name	Winter April 15 1981	Spring July 1 1981	Summer Sept. 1 1981	Fall Oct. 15 1981	Total 1981	Diff. From Long Term	Long Term Average	No. of Years
Sweetwater County (Continued)									
19	Radio Tower Exc.	E3.00	4.20	S.90	S2.29	10.39	+	7.58	21
196	Red Creek Ranch	3.18	4.55	1.39	3.47	12.59	-	12.68	10
101	Ten Mile Ridge	1.12	3.30	.92	1.00	6.34	+	5.95	13
	Mean n = 15	2.71	3.59	.89	1.82	9.01	(+.93)*	8.08	
	Percent by Season	30.1%	39.8%	9.9%	20.2%	100.0%			
							- 5		
	1981 Total average is 111.5% of Normal						+10		

S = Precipitation of multiple periods separated by estimate
ND = No Data, gauge destroyed.

Sublette County									
187	Mesa Antelope Exc.	2.14	2.85	1.25	.93	7.17	-	7.53	7
190	North Alkali	E2.50	E3.10	E.90	E.90	E7.40	+	5.89	7
188	North Mesa	2.98	3.55	1.20	1.03	8.76	+	7.90	4
189	Sand Draw Pasture	1.70	2.68	.80	.82	6.00	+	5.58	7
	Mean n = 4	2.33	3.04	1.04	.92	7.33	(+.61)*	6.72	
	Percent by Season	31.8%	41.5%	14.2%	12.5%	100.0%			
							-1		
	1981 Total average is 109.1% of Normal						+3		
Uinta County									
31	Cumberland #1 Exc.	S2.25	S2.87	S.35	S.74	6.21	-	7.80	16
34	Cumberland #4 Exc.	S2.50	S2.45	S.35	S.48	5.78	-	8.09	16
	Mean n = 2	2.38	2.66	.35	.61	6.00	(-1.94)*	7.94	
	Percent by Season	39.7%	44.3%	5.8%	10.2%	100.0%			
							-2		
	1981 Total average is 75.6% of Normal						+0		

TABLE I. (Continued)

Rain Gauge No.	Range Gauge Name	Winter April 15 1981	Spring July 1 1981	Summer Sept. 1 1981	Fall Oct. 15 1981	Total 1981	Diff. From Long Term	Long Term Average	No. of Years
Lincoln County									
198	Boulder Ridge Exc. BQ#1	E4.00	E3.00	E .05	.38	E 7.43	-	10.01	5
32	Cumberland #2 Exc.	S2.40	S2.06	S .71	S .77	5.94	-	9.19	17
33	Cumberland #3 Exc.	SE3.00	SE3.00	SE1.00	S .70	E 7.70	-	10.87	17
35	Elk Mountain Pit	S2.75	S2.00	S .44	S .90	6.09	-	8.77	16
230	Huff Creek Exc.	S5.00	S4.00	S1.25	S2.46	12.71	-	13.50	3
200	Mahogany Exc. BQ #3	S4.50	SE3.00	E .05	.46	E 8.01	-	10.32	5
216	Rock Creek Ridge Exc.BQ#2	S3.00	SE2.70	E .10	.12	E 5.92	-	8.67	4
	Mean n = 7	3.52	2.82	.51	.83	7.68	(-2.51)*	10.19	
	Percent by Season	45.9%	36.7%	6.6%	10.8%	100.0%			
							-7		
			1981 Total average is 75.4% of Normal				+0		

TABLE II. Precipitation data in inches from selected U.S. Weather Service Stations for the period October 16, 1980 through October 15, 1981[1]

Section Name	Winter 10/16/80- 4/15/81	Spring 4/16/81 6/31/81	Summer 7/1/81 8/31/81	Fall 9/1/81 10/15/81	Total[2] 1981	Diff. From Long Term	Stand. Normal or Mean	No. of Years
Big Horn Drainage								
Basin	1.51	E3.22	1.49	1.11	E7.33	+	6.47	73
Black Mountain	E4.83	E5.07	1.98	1.53	E13.41	+	13.33	19
Buffalo Bill Dam	2.11	7.18	1.25	.54	11.08	-	11.72	73
Cody	1.64	5.21	1.52	.61	8.98	-	9.63	70
Cody 12SE	E1.49	E4.67	.80	.52	E 7.48	-	11.46	30
Cody 21SW	3.06	5.87	1.48	.86	11.27	-	13.23	12
Deaver	.61	4.02	.83	E .45	E 5.91	+	5.58	62
Emblem	2.05	3.77	1.15	.87	7.84	+	7.35	33
Grass Creek	3.01	5.43	2.64	E1.19	E12.27	+	10.61	33
Greybull	1.42	3.76	1.31	.88	7.37	+	7.19	33
Heart Mountain	2.36	5.23	.93	.49	9.01	+	8.10	36
Lovell	2.20	4.45	.42	.91	7.98	+	6.95	68
Meeteetse *								
Powell	.76	4.51	.30	.30	5.87	-	6.09	71
Rairdon 2 WSW	1.43	3.58	1.08	1.20	7.29	+	6.43	31
Shell 4 ENE	E2.01	5.57	.92	E .90	E 9.40	-	10.02	24
Sunshine 2 ENE	5.14	8.45	3.84	1.26	18.69	+	14.84	19
Tensleep 4 NE	E4.26	4.99	1.09	.41	E10.75	-	13.03	18
Tensleep 16 SSE	4.10	4.93	3.22	1.41	13.66	+	12.69	26
Thermopolis 2	5.15	6.44	2.16	1.58	15.33	+	11.17	16
Thermopolis 25 WNW	4.28	6.88	E3.10	1.17	E15.43	+	12.14	27
Worland	2.29	3.66	1.32	1.38	8.65	+	7.40	67
Worland FAA AP	2.55	3.29	1.17	1.29	8.30	+	7.41	22
Mean n = 22	2.65	5.01	1.54	.95	10.15	(+.48)[3]	9.67	
Percent by season	26.1%	49.4%	15.2%	9.3%	100.0%			
						- 7 +15		

1981 Total average is 105.0% of Normal

TABLE II. (Continued)

Section Name	Winter 10/16/80- 4/15/81	Spring 4/16/81 6/31/81	Summer 7/1/81 8/31/81	Fall 9/1/81 10/15/81	Total 1981	Diff. From Long Term	Stand. Normal or Mean	No. of Years
Wind River Drainage								
Northern								
Boysen	2.33	4.24	1.15	1.26	8.98	-	9.26	36
Burris	3.48	3.41	1.68	.80	9.37	+	8.89	18
Diversion Dam	2.73	4.01	1.97	.82	9.53	-	9.70	60
Ft. Washakie 1 SE	E3.75	E4.25	E1.20	.80	E10.00	-	11.75	30
Gas Hills 4E	2.06	E4.28	E2.98	1.23	E10.55	+	9.86	20
Lost Cabin	1.32	3.72	3.04	.82	8.90	+	8.23	21
Pavillion	1.47	5.01	1.68	.44	8.60	-	8.82	62
Riverton	2.26	2.34	.72	E.73	E6.05	-	8.56	61
Riverton 2*								
Shoshoni	1.18	4.51	1.20	1.05	7.94	+	6.72	35
Mean n = 9	2.29	3.97	1.74	.88	8.88	(-.21)[3/]	9.09	
Percent by season	25.8%	44.7%	19.6%	9.9%	100.0%			
						-5		
1981 Total average is 97.6% of Normal						+4		
Southern								
Atlantic City Ore	4.15	4.16	2.89	E2.21	E13.41	-	15.58	18
Jeffrey City	3.20	E2.97	1.96	.30	E 8.43	-	10.14	17
Lander WSO AP	5.00	3.54	1.80	.67	11.01	-	13.84	89
Muddy Gap	5.34	3.45	1.71	1.28	11.78	+	9.90	33
Oregon Trail Cross.*								
Sand Draw*							9.79	
South Pass City							13.73	72
Mean n = 4	4.42	3.53	2.09	1.11	11.15	(-1.21)[3/]	12.36	
Percent by Season	39.6%	31.7%	18.7%	10.0%	100.0%			
						-3		
1981 Total average is 90.2% of Normal						+1		
All Combined								
Mean n = 13	2.95	3.83	1.85	.95	9.58	(-.52)[3/]	10.10	
Percent by Season	30.8%	40.0%	19.3%	9.9%	100.0%			
						-8		
1981 Total average is 94.8% of Normal						+5		

*Recording gauges

TABLE II. (Continued)

Section Name	Winter 10/16/80- 4/15/81	Spring 4/16/81 6/31/81	Summer 7/1/81 8/31/81	Fall 9/1/81 10/15/81	Total 1981	Diff. From Long Term	Stand. Normal or Mean	No. of Years
Platte Drainage - Central and SE Wyoming								
Alcova 17 NW	E6.79	4.88	E2.70	.75	E15.12	+	11.30	26
Baggs	2.94	5.99	2.32	4.44	15.69	+	14.48	2
Bates Creek 2	3.74	4.83	2.99	.95	12.51	+	12.44	13
Casper 2 E	E5.03	E5.05	E2.00	E.65	E12.73	-	13.37	61
Casper WSD AP	3.95	4.56	1.77	.57	10.85	-	11.22	43
Pathfinder Dam	E4.23	3.70	2.61	1.04	E11.58	+	9.51	74
Powder River 1 *								
Powder River 2 SW	5.72	4.75	3.47	1.54	15.48	+	12.45	18
Rawlins FAAAP	2.71	3.17	3.24	1.97	11.09	+	8.98	34
Saratoga	3.23	3.02	2.22	1.54	10.01	+	9.16	30
Seminoe Dam	5.78	4.47	3.42	1.90	15.57	+	12.37	42
Shirley Basin Station	1.69	4.18	2.53	E1.19	E 9.59	+	7.56	4
Mean, n = 11	4.16	4.42	2.66	1.50	12.74	(+1.57)[3/]	11.17	
Percent by Season	32.6%	34.7%	20.9%	11.8%	100.0%			
						-2		
		1981 Total average is 114.0% of Normal				+9		
Green River Drainage								
Big Piney	1.52	E2.45	E1.75	E1.10	E6.82	-	8.60	43
Bitter Creek 4E	E1.25	3.02	.44	.95	E5.66	-	7.17	19
Church Buttes Gas	2.40	2.45	.46	.38	5.69	-	8.80	26
Creston *								
Evanston 1 E	5.26	3.24	.55	3.05	12.10	+	10.96	80
Farson	3.55	2.87	1.30	1.48	9.20	+	7.16	30
Fontenelle Dam	2.33	2.34	.72	1.31	6.70	+	6.68	19
Green River	E3.11	1.61	.60	1.65	E6.97	-	8.54	74
Kemmerer 4 SW	2.90	2.47	.88	1.40	7.65	-	9.53	47
LaBarge 4 WNW	E2.91	1.90	E1.55	E1.25	E7.61	-	8.55	19
Merna	4.27	5.37	1.34	.98	11.96	-	14.15	17
Mud Spring *								

TABLE II. (Continued)

Section Name	Winter 10/16/80-4/15/81	Spring 4/16/81 6/31/81	Summer 7/1/81 8/31/81	Fall 9/1/81 10/15/81	Total 1981	Diff. From Long Term	Stand. Normal or Mean	No. of Years
Green River Drainage (Continued)								
Pinedale	3.15	4.31	1.30	1.69	10.45	-	11.23	57
Rock Springs FAA AP	3.55	3.81	1.90	1.60	10.86	+	8.79	52
Sage 4 NNW	E3.32	3.04	.77	1.92	E9.05	-	10.16	51
Wamsutter 1 N	1.29	1.97	1.93	1.52	6.71	+	6.15	32
Mean n = 14	2.91	2.92	1.11	1.45	8.39	(-.63)[3/]	9.03	
Percent by Season	34.8%	34.8%	13.2%	17.2%	100.0%			
						-9		
		1981 Total average is 93.0% of Normal				+5		

With Merna omitted the summary of remaining 13 stations would be changed as shown below.

Mean n = 13	2.81	2.73	1.09	1.49	8.12	(.52)[3/]	8.64
Percent by Season	34.61%	33.62%	13.42%	18.35%	100.0%		
						-8	
		1981 Total average is 93.4% of Normal				+5	

E = Estimate compiled by H. G. Fisser, Div. Range Management, Univ. Wyo., based on precipitation values at nearby U.S. Weather Service, BLM and Univ. of Wyo. rain gauges.

[1/] =National climatic center, 1980 and 1981. Climatalogical Data Annual Summary, Wyoming. U.S. Dept. Commerce, Environmental Data Service, Nat'l. Oceanic & Atmos. Admin., Vols. 89 & 90 Nos. 1-13.

[2/] =Computed for the period October 16, 1980 through October 15, 1981.

[3/] =Difference of average annual for all gauges in 1981 from long term average.

TABLE II. Supplement A. Compilation of longterm precipitation records. Initial data base through 1975 from W.R.R.I. computer output (now with Agric. Mech. Div., Univ. Wyo.). Data for years 1976 through 1981 obtained from U.S.D.I.-N.O.A.A. Weather Service Annual Report. Estimates for missing data compiled by H.G. Fisser, Div. Range Manage., Univ. Wyo. based on precipitation values at nearby weather service and Univ. Wyo. rain gauges.

Station Name	Mean through 1975	1976	1977	1978	1979	1980	1981	Mean	No. Yrs. Record
Big Horn Drainage									
Black Mtn.	13 yr mean = 12.95	E17.44	13.82	18.51	11.56	E10.12	13.41	13.33	19
Cody 12 SE	24 yr mean = 11.71	12.48	7.38	E14.50	E 7.49	E13.58	E 7.48	11.46	30
Emblem	27 yr mean = 7.27	7.12	6.11	8.98	E 6.07	10.20	7.84	7.35	33
Grass Creek	27 yr mean = 10.50	E 9.00	7.12	15.17	10.43	12.62	12.27	10.61	33
Greybull	25 yr mean = 6.89	11.15	E 7.00	9.08	6.72	9.20	7.37	7.19	31
Heart Mtn.	30 yr mean = 7.93	9.34	6.55	E10.30	6.86	E11.73	9.01	8.10	36
Rairdon 2WSW	25 yr mean = 6.13	7.69	6.10	9.86	6.98	8.14	7.29	6.43	31
Shell 4ENE	18 yr mean = 9.84	E12.00	E10.00	E15.00	E 8.00	E 9.00	E 9.40	10.02	24
Sunshine 2ENE	13 yr mean = 14.46	E17.06	11.50	17.14	E11.88	E17.74	18.69	14.84	19
Tensleep 4NE	12 yr mean = 13.24	15.51	12.40	16.06	10.16	E10.84	10.74	13.03	18
Tensleep 16SSE	20 yr mean = 12.85	11.76	10.93	17.83	8.60	10.27	13.66	12.69	26
Thermop 25 WNW	21 yr mean = 11.87	11.77	E 9.35	E15.41	E11.53	E15.16	15.43	12.14	27
Worland FAAAP	16 yr mean = 7.20	9.20	E 4.73	10.81	5.95	8.92	8.30	7.41	22
Wind River Drainage									
Boysen Dam	30 yr mean = 9.28	E10.56	8.70	11.78	6.60	8.37	8.98	9.26	36
Gas Hills 4E	14 yr mean = 9.84	11.53	E12.68	11.77	E 8.11	E 4.83	10.55	9.86	20
Lost Cabin	15 yr mean = 8.27	9.63	E 7.00	E10.00	E 7.29	E 5.92	8.90	8.23	21
Muddy Gap	27 yr mean = 9.60	E10.00	E11.50	E11.50	E13.79	E 8.80	11.78	9.90	33
Sand Draw	29 yr mean = 9.79	(Discontinued?)							
Shoshoni	29 yr mean = 6.67	7.52	5.96	8.03	6.47	5.95	7.94	6.72	35
Platte Drainage									
Bates Creek	7 yr mean = 12.99	15.98	11.02	15.62	E 6.98	8.63	12.51	12.44	13
Rawlins FAAAP	28 yr mean = 8.87	7.09	8.76	9.61	9.23	11.20	11.09	8.98	34
Green River Drainage									
Fontenelle Dam	13 yr mean = 6.83	5.26	5.35	7.63	4.19	9.01	6.70	6.68	19
LaBarge 4WNW	13 yr mean = 8.57	9.36	6.55	6.77	E 5.31	E15.39	7.61	8.55	19
Wamsutter 1N	26 yr mean = 6.12	4.38	E 5.53	7.89	E 4.34	E 8.93	6.71	6.15	32

TABLE II. Supplement B. File of annual precipitation from new USDA, NOAA, Weather Service Stations and most recent 30 year annual means at older stations. Estimates for missing data compiled by H. G. Fisser, Div. Range Manage., Univ. Wyo. based on precipitation values at nearby weather service and Univ. Wyo. rain gauges.

		BIG HORN DRAINAGE			WIND RIVER DRAINAGE	
	Cody 21 SW	Atlantic City Ore Mine	Burris	Fort[5] Washakie 19E (48)[3]	Jeffrey City	Oregon[8] Trail Crossing
1952[1]				9.73		
1953				10.82		
1954				6.09		
1955				E 8.42		
1956				E10.61		
1957				20.85		
1958				12.69		
1959				9.81		
1960				9.40		
1961				12.42		
1962				13.35		
1963		-----	-----	11.33		
1964		21.06	5.56	9.95	-----	
1965		20.85	7.06	13.80	10.41	
1966		12.03	7.68	11.05	E10.90	
1967		19.19	14.49	18.26	E12.00	
1968	[4]	12.79	8.80	14.36	E 9.00	
1969	-----	14.69	6.31	9.95	E 9.00	
1970	11.71	13.43	7.37	12.39	E10.00	
1971	E16.77	18.32	12.43	18.39	E11.00	
1972	15.82	17.65	6.73	9.90	E11.00	
1973	13.21	E18.99	13.09	16.83	E12.00	
1974	13.66	11.78	5.49	E 6.38	E 8.00	
1975	18.71	E13.98	E 8.37	E12.15	E 9.00	
1976	11.74	E13.80	E 9.96	E 9.55	E 8.00	
1977	10.28	13.79	E 9.14	E12.06	E 9.00	
1978	15.20	13.62	10.09	13.26	E15.77	
1979	9.13	13.12	6.02	8.70	10.07	
1980	11.25	18.02	11.83	E10.00	8.90	
1981[2]	11.27	E13.41	9.37	E10.00	E 8.43	
N =	12	18	18	30	17	
Mean	13.23	15.58	8.89	11.75	10.14	

KEY:

1) Based on calender year total
2) Based on UW year October 16, 1980 thru October 15, 1981
3) Values in parentheses indicate number of years of previous record
4) -- Lines indicate beginnings of records at station
5) Ft. Washakie 2S standard normal average for 50 years through 1958 is 11.76
6) Saratoga standard normal average for 40 years through 1958 is 9.53
7) Farson standard normal average through 1958 is 7.61
8) Data not available

TABLE II. Supplement B. (Continued)

PLATTE RIVER DRAINAGE

	Alcova 17NW	Baggs	Casper[8] 2E	Powder[8] River 1E	Powder River 2SW	Saratoga[6] (49)[3]	Shirley Basin
1952						E 8.23	
1953						E 7.59	
1954						6.44	
1955	-----					6.20	
1956	E 6.34					E 8.29	
1957	13.05					10.41	
1958	7.17					5.69	
1959	8.56					8.22	
1960	5.68					7.67	
1961	8.22					10.91	
1962	E12.07					8.47	
1963	13.40				-----	7.60	
1964	9.17				E11.43	9.74	
1965	12.22				E 9.69	11.64	
1966	7.43				E11.19	9.42	
1967	11.13				E14.24	13.21	
1968	11.37				E14.07	E10.91	
1969	6.43				E 7.89	8.70	
1970	10.81				E11.80	10.51	
1971	E10.50				E 9.78	E 5.88	
1972	19.00				6.77	11.58	
1973	E18.66				14.04	11.27	
1974	E 8.91				16.31	10.33	
1975	E 7.45				E15.46	9.10	
1976	E10.36				E13.29	9.21	
1977	E 8.64				E14.67	9.83	-----
1978	E20.42				17.26	8.66	9.11
1979	12.87	-----			11.97	8.77	4.95
1980	E18.71	E13.27			8.82	10.47	6.59
1981[2]	E15.12	15.69			15.48	10.01	E 9.59
N	26	2			18	30	4
Mean	11.30	14.48			12.45	9.16	7.56

TABLE II Supplement B. (Continued)

		GREEN RIVER DRAINAGE		
Bitter Creek 4E	Church Buttes Gas	Creston	Farson[7] (34)	Merna
1952			5.74	
1953			E 6.49	
1954		=====	6.42	
1955		=====	5.45	
1956		5.32	4.31	
1957		19.72	11.07	
1958		E 5.35	6.09	
1959		E 9.30	6.20	
1960		6.68	5.03	
1961		E10.06	6.00	
1962	=====	6.91	3.40	
1963	5.95	8.53	7.24	
1964	E 6.28	9.80	6.49	=====
1965	E 9.44	E13.94	9.03	15.53
1966	6.46	9.04	6.65	13.68
1967	E 6.50	E 7.83	9.06	19.00
1968	E 5.96	11.02	8.75	16.41
1969	E 9.09	E 9.44	E 7.97	13.45
1970	E 8.29	E 8.86	7.90	18.96
1971	E 7.70	9.43	10.16	16.91
1972	E 6.58	7.71	6.95	12.04
1973	8.26	10.97	E 7.58	13.61
1974	5.43	E 5.27	E 4.91	9.15
1975	E 8.84	E 8.40	E 6.70	16.38
1976	E 7.77	6.14	E 6.70	11.43
1977	E 6.06	E 7.40	9.29	15.04
1978	E10.17	E11.39	E10.85	9.97
1979	4.74	6.26	6.09	9.82
1980	E 7.11	E 8.46	E 6.97	17.28
1981	E 5.66	5.69	9.20	11.96
N	19	26	30	17
Mean	7.17	8.80	7.16	14.15

TABLE III. Seasonal distribution and summary of precipitation (inches) by county, region and drainage areas from U.W., BLM and Weather Service rain gauges from October 16, 1980 through October 15, 1981.

	Recording Dates 1981				No. of Gauges	1981 Total Avg. Ppt	Diff from Ann. Avg.	Long Term Ann. Avg.	No. Gauge Above (+) or below (-) Long term Avg.	
UW & BLM Gauges	4/15	7/1	9/1	10/15					(+)	(-)
Big Horn County	1.90	4.44	1.39	1.35	32	9.08	+ .85	8.23	23	9
Park County	1.73	4.47	1.08	.49	19	7.77	-1.03	8.80	5	14
Washakie County	2.51	4.10	1.32	1.10	27	9.03	+ .87	8.16	24	3
Hot Springs Co.	3.52	5.51	2.35	1.09	21	12.47	+1.93	10.54[2]	16	2
Big Horn Basin Avg.[1]	2.38	4.58	1.51	1.06	99	9.53	+ .77	8.76[3]	68	28
Percent by Season	25.0%	48.1%	15.8%	11.1%		100.0%				
1981 Total average is 108.8% of Normal										
Fremont County	2.37	4.29	1.38	1.07	42	9.11	+ .69	8.42	30	12
Percent by Season	26.0%	47.1%	15.1%	11.8%		100.0%				
1981 Total average is 108.2% of Normal										
Natrona County	3.58	3.47	2.23	.64	8	9.92	+ .84	9.08	7	1
Percent by Season	36.1%	35.0%	22.5%	6.4%		100.0%				
1981 Total average is 109.2% of Normal										
Carbon County	3.91	3.98	1.53	3.13	13	12.55	+3.33	9.22	13	0
Sweetwater County	2.71	3.59	.89	1.82	15	9.01	+ .93	8.08	10	5
South Wyo. Avg[1]	3.27	3.77	1.19	2.43	28	10.66	+2.05	8.61	23	5
Percent by Season	30.7%	35.4%	11.1%	22.8%		100.0%				
1981 Total average is 123.8% of Normal										
Uinta County	2.38	2.66	.35	.61	2	6.00	-1.94	7.94	0	2
Lincoln County	3.52	2.82	.51	.83	7	7.68	-2.51	10.19	0	7
Sublette County	2.33	3.04	1.04	.92	4	7.33	+ .61	6.72	3	1
Western Wyo. Avg.	2.98	2.86	.65	.82	13	7.31	-1.47	8.78	3	10
Percent by Season	40.8	39.1%	8.9%	11.2%		100.0%				
For Western Wyo 1981 Total average is 83.3% of Normal										
All Gauges Combined	2.60	4.23	1.41	1.23	190	9.47	+.79	8.68	131	56
Percent by Season	27.4%	44.7%	14.9%	13.0%		100.0%				
1981 Total average is 109.1% of Normal										

TABLE III. (Continued)

UW & BLM Gauges	Recording Dates 1981 4/15	7/1	9/1	10/15	No. of Gauges	1981 Total Avg. Ppt	Diff from Ann. Avg.	Long Term Ann. Avg.	No. Gauge Above (+) or below (-) Long term Avg. (+)	(-)
WEATHER SERVICE GAUGES										
Big Horn Drainage	2.65	5.01	1.54	.95	22	10.15	+.48	9.67	7	15
Percent by Season	26.1%	49.4%	15.2%	9.3%		100.0%				
1981 Total average is 105.0% of Normal										
Wind River Drainage	2.95	3.83	1.85	.95	13	9.58	-.52	10.10	5	8
Percent by Season	30.8%	40.0%	19.3%	9.9%		100.0%				
1981 Total average is 94.8% of Normal										
Platte Drainage	4.16	4.42	2.66	1.50	11	12.74	+1.57	11.17	9	2
Percent by Season	32.6%	34.7%	20.9%	11.8%		100.0%				
1981 Total average is 114.0% of Normal										
Green River Drainage	2.91	2.92	1.11	1.45	14	8.39	-.63	9.03	5	9
Percent by Season	34.8%	34.8%	13.2%	17.2%		100.0%				
1981 Total average is 92.9% of Normal										
All Areas Combined[1]	3.05	4.16	1.71	1.17	60	10.09	+.20	9.89	26	34
Percent by Season	30.2	41.2	17.0	11.6		100.0%				
1981 Total average is 102.0% of Normal										
SUMMARY ALL RECORDS	2.71	4.21	1.48	1.22	250	9.62	+.76	8.86	157	90
	28.2%	43.7%	15.4%	12.7%		100.0%				
1981 Total average is 108.6% of Normal										

[1] Weighted averages over all gauges by county or region

[2] N = 18

[3] N = 96

TABLE IV. Precipitation data (inches) for all UW and BLM gauges in the Big Horn Basin for th 1981 Season (October 16, 1980 through October 15, 1981).

Rain Gauge No.	Gauge Name & BLM Number	Apr 15 81	Jun 1 81	Jul 1 81	Aug 1 81	Sep 1 81	Oct 15 81	1981 Total	Long Term *Average	No Ye Re
1	Ant Hill Worland Exc.	E2.25	3.25	.41	.82	.17	1.04	E 7.94	+ 6.49	2
176	Basin Flats Exc.	2.04	3.60	.26	2.50	.42	1.20	10.02	+ 7.13	1
245	Beaver Creek TG	2.05	4.05	1.25	.70	1.88	1.40	11.33	+ 9.76	
207	Beaver Slide BLM 7	2.22	5.18	.36	E.65	.48	.71	E 9.60	- 11.58	
117	Big Bend Exc.	3.96	3.70	.60	.95	.30	1.00	10.51	+ 10.32	1
123	Big Flat Exc.	1.94	3.41	.24	1.80	.24	1.07	8.70	+ 6.37	1
147	Big Sage Exc.	1.13	S4.85	S .30	S.15	S.10	.58	7.11	- 8.06	1
235	Big Sand Coulee TG	.75	3.65	.52	.48	.45	.48	6.33	- 8.72	
146	Big Sky Exc.	1.38	S4.00	S.20	S.40	S.26	.60	6.84	- 8.60	1
150	Big Trails GRI Exc.	4.29	4.14	.50	.86	1.43	1.30	12.52	- 12.98	1
219	Blue Ridge WRA 3	1.20	3.15	.10	3.45	.20	1.40	9.50	+ 7.57	
41	Bud Kimball Exc.	2.04	3.30	.70	.65	.40	1.25	8.34	- 9.25	2
100	Buffalo Basin Exc.	2.46	4.41	.77	2.20	.76	.69	11.29	+ 10.22	1
7	Buffalo Creek Exc.	2.97	3.50	.55	.85	.50	1.05	9.42	- 10.30	1
17	Burnt Wagon Exc.	1.48	3.98	.18	.25	.09	.76	6.74	+ 6.14	2
193	Canyon Creek	2.63	S4.00	S.46	S.80	S.36	.39	8.64	- 9.00	
220	Cedar Mountain WRA 4	2.10	4.60	.60	.50	.00	1.55	9.35	+ 9.23	
179	Chalk Exc.	1.40	3.65	.10	.64	.13	1.04	6.96	+ 6.30	2
232	Coal Creek TG	1.22	4.50	.78	.62	.25	.42	7.79	- 9.14	
76	Cochran Exc.	4.34	3.65	1.05	1.25	.45	1.30	12.04	- 10.32	2
222	Cornell Gulch WRA 10	1.70	3.60	.50	.75	.75	1.20	8.50	+ 7.40	
233	Cottonwood Creek TG	.80	4.00	.96	.34	.25	.40	6.75	- 7.64	
221	Cottonwood Oil Field WRA 6	.85	2.95	.30	.46	.74	.95	6.25	+ 5.80	
208	Dead Indian BLM 8	1.29	3.43	.18	.55	.10	.52	6.07	- 6.30	
8	Demer Exc.	3.82	3.75	.40	.90	.15	1.05	10.07	+ 8.54	2
212a	Dorsey Creek BLM 12	1.61	3.38	.27	.21	.27	.58	6.32	- 6.84	
212b	Dorsey Creek UW	1.58	3.30	.18	.15	.18	.49	5.88	- 6.31	
243	Dry Creek TG	.90	2.20	.00	2.75	.00	.70	6.55	- 6.80	
4	Dutch Nick Flat Exc.	2.09	4.61	.12	.52	.37	.80	8.51	+ 7.19	2
199	East Ridge Exc. (sec R.G. 206 Squaw Teats)									
231	Egbert Draw BLM 16	6.00	5.50	1.20	2.90	1.10	1.15	17.85	+ 17.85	
211	Elk Creek BLM 11	1.50	1.28	.28	.55	.32	.70	4.63	- 5.85	
194	Emblem Bench TG	.60	2.90	.46	.46	.18	.60	5.20	+ 5.05	
15	15 Mile Pastures (see R.G. Chalk Exc.)									2
240	Garland Oil Field TG	.60	3.55	.44	.48	.18	.28	5.53	- 6.08	
24	Halogeton Exc. #1	1.04	2.93	.31	.26	.15	1.48	6.17	+ 5.47	2
167	Halogeton Exc. #2	1.26	3.08	.40	.31	.07	1.57	6.69	+ 6.04	1
168	Halogeton Exc. #3	.96	2.95	.33	.26	.06	1.52	6.08	+ 5.61	1
177	Hawk Exc.	1.75	3.96	.19	.22	.09	.75	6.96	+ 6.15	2
145	Hilltop Springs	6.10	5.35	.64	.40	.30	.85	13.64	- 14.07	1
12	Horse Creek Exc.	3.08	4.56	1.09	.88	.96	1.75	12.32	+ 11.11	2
113	Horse Haven Exc.	E2.00	3.85	.28	2.22	1.10	1.15	E10.60	+ 7.06	1
21	Kane Deer Exc.	2.84	7.47	1.03	1.46	.12	2.33	15.25	+ 11.99	1
149	Kane GRI Exc.	2.65	7.33	.98	1.30	.12	2.34	14.72	+ 12.46	1
116	Kane Seed Exc.	1.11	4.36	.57	.50	.07	1.98	8.59	+ 7.01	1
246	Kane Seed Exc. TG	.75	4.15	.64	.46	.10	.95	7.05	- 7.15	

LE IV. (Continued)

n ge	Gauge Name & BLM Number	Apr 15 81	Jun 1 81	Jul 1 81	Aug 1 81	Sep 1 81	Oct 15 81	1981 Total	Long Term *Average	No. Years Record
	Kirby Creek Exc.	4.76	4.45	.60	1.75	.55	1.30	13.41	+ 9.86	19
	Kirby Creek WRA 9	3.95	4.25	.70	1.35	.30	1.35	11.90	+ 9.54	3
	Lime Ridge BLM 17	4.70	5.00	.65	1.30	1.37	.75	13.77	+ 13.77	1
	Little Dry Creek	1.22	4.85	.55	1.29	.43	.52	8.86	+ 8.48	7
	Little Dry Creek TG	.70	2.65	.30	3.15	.55	.55	7.90	- 8.15	2
	Little Sand Coulee TG	1.45	4.05	.70	.95	.10	.38	7.63	- 8.84	2
	Lower Enos Creek Exc.	3.70	5.48	.57	2.46	.26	.88	13.35	+ 11.09	14
	Luman Creek WRA 5	2.95	E6.25	1.05	.85	.10	2.45	E13.65	+ 12.21	3
	Medicine Lodge GRI Exc.	4.60	5.85	.77	.77	.33	2.20	14.52	+ 14.21	14
	Mills Burn	4.29	4.56	.45	1.05	1.18	1.38	12.91	+ 12.56	11
a	Murphy Draw BLM 5	.93	4.22	.10	.50	.80	.80	7.35	- 7.44	4
b	Murphy Draw UW									
	North Butte Thermop. Relic	4.63	6.43	.49	1.00	.35	1.17	14.07	+ 10.98	10
	North Cowley TG	1.05	3.40	.52	.53	.05	.45	6.00	- 6.85	2
	North Shell Allotment TG	1.35	3.45	.52	.48	.66	1.35	7.81	+ 7.53	2
	O. B. Reservoir BLM 15	3.45	5.50	.56	1.80	.96	.75	13.02	+ 12.28	4
	Oregon Basin TG	1.67	3.15	.66	.30	.14	.20	6.12	- 8.58	2
	Pole Cat Bench TG	.85	1.40	.56	.40	.20	.37	3.78	- 6.24	2
	Potato Ridge Exc.EULA(So.)	2.34	3.62	.67	1.08	.16	1.64	9.51	+ 8.14	14
	Potato Ridge Exc.WRA 1	1.30	3.40	.80	1.05	.10	1.55	8.20	+ 7.49	3
a	Prospect Creek BLM	2.15	4.40	.30	1.85	1.20	.75	10.65	+ 9.93	4
b	Prospect Creek UW									
a	Rankin Basin BLM 4 (Grass Cr.)	2.30	4.95	.20	1.05	.65	1.07	10.22	+ 9.40	4
b	Rankin Basin Exc. UW	2.31	4.99	.37	.96	.65	.99	10.27	+ 9.87	4
c	Rankin Basin Exc. UWL	2.00	5.39	.22	1.02	.68	1.32	10.63	- 10.99	4
	Rice Burn Exc.	4.13	5.52	.69	1.25	.35	1.83	13.77	+ 13.77	8
	Rock Creek BLM 18	S2.75	5.00	1.85	1.35	1.94	1.25	14.14	+ 14.14	1
	Round Top Mountain	5.83	5.97	.40	1.08	.39	1.02	14.69	+ 11.90	10
	Sand Creek Exc.	2.25	3.90	.35	.43	.48	1.32	8.73	+ 6.82	15
	Sand Draw WRA 8	3.25	4.05	.60	1.15	.00	1.10	10.15	+ 8.00	3
	Sand Gulch Exc.	3.88	3.45	.70	1.65	.35	1.25	11.28	+ 9.02	20
	Schuster Draw BLM9	2.90	2.35	.84	1.10	.74	1.00	8.93	+ 7.67	4
	Sheep Springs Exc.	4.16	5.85	1.15	1.07	1.02	2.30	15.55	+ 13.91	21
	Sheep Springs WRA 2	2.55	5.55	.45	1.05	1.00	2.20	23.80	+ 11.89	3
	Sheldon Gulch Exc.ATGA(No.)	2.41	3.58	.69	1.17	.16	1.69	9.70	+ 7.82	14
	Sh.Fork Meetsetse Creek TGE	3.25	4.45	.02	1.13	.10	.45	E9.40	- 13.20	2
	Skyline	2.91	S3.70	S.67	S.90	S.39	.28	8.85	+ 8.22	8
	Smilo Exc.	3.82	4.35	.46	2.44	.49	1.03	12.59	+ 9.24	21
	South Fork 15 Mile BLM 10	2.24	3.32	.25	1.03	1.12	.80	8.76	+ 8.43	4
	Spring Creek Road BLM 3	1.42	3.03	.45	.70	.32	1.18	7.10	+ 6.46	4
	Spring Creek Road WRA 7	4.30	3.50	.75	1.05	.85	1.75	12.20	+ 10.49	3
	Squaw Teats BLM 6	1.31	3.68	.29	1.20	.85	.73	8.06	+ 7.78	4
	State Line	.98	S4.10	S.60	S.60	S.51	.43	7.22	+ 6.40	8
	Tolman Ridge Exc.	2.48	4.04	.40	.34	.39	1.23	8.88	+ 6.56	15
	Twentyone Creek BLM 14	2.86	6.27	.46	2.30	1.00	1.18	14.07	+ 12.44	4
	Two Mile Hil Exc.	3.36	3.60	.40	1.65	.30	1.25	10.56	+ 9.52	21
	Upper Enos Creek Exc.	5.45	6.07	.70	1.90	.31	1.47	15.90	+ 15.06	13
	Wagonhound BLM 13	2.19	4.50	.40	1.90	.90	.75	10.64	+ 9.14	4

TABLE IV. (Continued)

Rain Gauge No.	Gauge Name & BLM Number	Apr 15 81	Jun 1 81	Jul 1 81	Aug 1 81	Sep 1 81	Oct 15 81	1981 Total	Long Term *Average
201	Waugh Dome BLM 1	2.53	3.95	.50	3.85	.57	1.45	12.85	+ 10.11
13	West Pasture Exc.	1.20	3.77	.20	.20	.10	.44	5.91	+ 5.72
239	Whistle Creek TG	1.15	1.60	E.50	.30	.00	.30	E3.85	- 5.49
178	Willwood Exc.	1.51	3.51	.10	.55	.15	1.09	6.91	+ 6.20
115	Worland Cattle Co. Exc.	3.25	2.70	.35	1.50	.10	1.25	9.15	+ 8.31
238	YU Bench TG	.75	2.20	.46	.89	.15	.50	4.95	- 6.16
	Average of 96 Gauges	2.40	4.09	.52	1.07	.45	1.06	9.59	9.00
	Percent by Season	25.1%	42.6%	5.4%	11.1%	4.7%	11.1%	100.0%	
	Average of 96 Gauges Four Seasons	2.40		4.61		1.52	1.06	9.59	9.00
	Percent by Season	25.1%		48.0%	15.8%	11.1%	100.0%		

1981 Total is 106.6% of Normal -28

+68

Total number of UW and BLM gauges in the Big Horn Basin 96

TG = Taylor Gauge

BLM_ = Gauge Series Numbers Grass Creek Resource Area

WBA_ = Gauge Series Numbers Washakie Resource Area

UW = University of Wyoming Gauge

UWL = University Gauge - 8" orifice

* = The + or - indicates whether the precipitation for the 1981 season was at least equal (+) or less (-) than the long term average.

LE V. Distribution of 1981 Precipitation (inches) for Three Vegetation Types at the Big Horn Basin Perimeter Gauges.

Vegetation Type	10/16-4/15	4/16-5/31	6/1-6/30	7/1-7/31	8/1-8/31	9/1-10/15	1981 Total	Long Term Average
Juniper Woodland Rain Gauges								
Kane GRI Exc.	2.65	7.33	.98	1.30	.12	2.34	14.72	12.46
Kane Deer Exc.	2.84	7.47	1.03	1.46	.12	2.33	15.25	11.99
Mills Burn	4.29	4.56	.45	1.05	1.18	1.38	12.91	12.56
Upper Enos Cr. Exc.	5.45	6.07	.70	1.90	.31	1.47	15.90	15.06
Little Dry Cr.	1.22	4.85	.55	1.29	.43	.52	8.86	8.48
Medicine Lodge GRI Exc.	4.60	5.85	.77	.77	.33	2.20	14.52	14.21
Rice Burn Exc.	4.15	5.52	.69	1.25	.35	1.83	13.77	13.77
Big Trails GRI Exc.	4.29	4.14	.50	.86	1.43	1.30	12.52	12.98
mean, n = 8	3.69	5.72	.71	1.24	.53	1.67	13.56	12.69
Standard Deviation	1.35	1.22	.21	.36	.49	.63	2.21	1.98
Percent by Season	27.2%	42.3%	5.2%	9.1%	3.9%	12.3%	100.0%	
Percent of Normal							106.8%	
Sagebrush-Grasslands Rain Gauges								
Buffalo Basin Exc.	2.46	4.41	.77	2.20	.76	.69	11.29	10.22
Lower Enos Cr. Exc.	3.70	5.48	.57	2.46	.26	.88	13.55	11.09
Horse Cr. Exc.	3.08	4.56	1.09	.88	.96	1.75	12.32	11.11
Rankin Basin Exc. (Grass Cr.)	2.31	4.99	.37	.96	.65	.99	10.27	9.87
Sheep Springs Exc.	2.55	5.55	.45	1.05	1.00	2.20	12.80	11.89
mean, n = 5	2.82	5.00	.65	1.51	.73	1.30	12.01	10.84
Standard Deviation	.57	.52	.29	.76	.30	.64	1.29	.80
Percent by Season	23.5%	41.6%	5.4%	12.6%	6.1%	10.8%	100.0%	
Percent of Normal							110.8%	
Desert Shrublands Rain Gauges								
Kane Seed Exc.	1.11	4.36	.57	.50	.07	1.98	8.59	7.01
Halogeton Exc. #1	1.04	2.93	.31	.26	.15	1.48	6.17	5.47
Halogeton Exc. #2	1.26	3.08	.40	.31	.07	1.57	6.69	6.04
Halogeton Exc. #3	.96	2.95	.33	.26	.06	1.52	6.08	5.61
Potato Ridge Exc.	2.34	3.62	.67	1.08	.16	1.64	9.51	8.17
Sheldon Gulch Exc.	2.41	3.58	.69	1.17	.16	1.69	9.70	7.82
mean, n = 6	1.52	3.42	.49	.60	.11	1.65	7.79	6.69
Standard Deviation	.67	.55	.17	.42	.05	.18	1.67	1.15
Percent by Season	19.5%	43.9%	6.3%	7.7%	1.4%	21.2%	100.0%	
Percent of Normal							116.4%	
All Vegetation Types								
mean, n = 19	2.78	4.80	.62	1.11	.45	1.57	11.33	10.31
Standard Deviation	1.42	1.26	.23	.60	.42	.56	2.25	2.21
Percent by Season	24.5%	42.4%	5.5%	9.8%	4.0%	13.8%	100.0%	
Percent of Normal							109.9%	

TABLE VI. County Locations and 1981 Seasonal Precipitation Data (inches) From Weather Servi
Gauges in the Big Horn Basin

	10/16/80-4/15/81	4/16/81-6/30/81	7/1/81-8/31/81	9/1/81 10/15/81	Total	Diff. from Long Term	Long Term Averages
Park County							
Basin	1.51	E 3.22	1.49	1.11	E 7.33	+	6.47
Buffalo Bill Dam	2.11	7.18	1.25	.54	11.08	-	11.72
Cody	1.64	5.21	1.52	.61	8.98	-	9.63
Cody 12 SE	E1.49	E 4.67	.80	.52	E 7.48	-	11.46
Cody 21 SW	3.06	5.87	1.48	.86	11.27	-	13.23
Heart Mountain	2.36	5.23	.93	.49	9.01	+	8.10
Meeteetse *							
Powell	.76	4.51	.30	.30	5.87	-	6.09
Sunshine 2 ENE	5.14	8.45	3.84	1.26	18.69	+	14.84
mean, n = 8	2.26	5.54	1.45	.71	9.96	(-.23)1/	10.19
% by Season	22.7%	55.6%	14.6%	7.1%	100.0		
% of Normal					97.7%		
Big Horn County							
Deaver	.61	4.02	.83	E .45	E 5.91	+	5.58
Emblem	2.05	3.77	1.15	.87	7.84	+	7.35
Greybull	1.42	3.76	1.31	.88	7.37	+	7.19
Lovell	2.20	4.45	.42	.91	7.98	+	6.95
Rairdon	1.43	3.58	1.08	1.20	7.29	+	6.43
Shell 4ENE	E 2.01	5.57	.92	E .90	E 9.40	-	10.02
mean, n = 6	1.62	4.19	.95	.87	7.63	(+.38)1/	7.25
% by Season	21.2%	54.9%	12.5%	11.4%	100.0%		
% of Normal					105.2%		
Washakie County							
Tensleep 4 NE	E 4.26	4.99	1.09	.41	E10.75	-	13.03
Tensleep 16 SSE	4.10	4.93	3.22	1.41	13.66	+	12.69
Worland	2.29	3.66	1.32	1.38	8.65	+	7.40
Worland FAAP	2.55	3.29	1.17	1.29	8.30	+	7.41
mean, n = 4	3.30	4.22	1.70	1.12	10.34	(+.21)1/	10.13
% by Season	31.9%	40.8%	16.4%	10.9%	100.0%		
% of Normal					102.1%		
Hot Springs County							
Anchor Dam *							
Black Mountain	E 4.83	E 5.07	1.98	1.53	E13.41	+	13.33
Grass Creek	3.01	5.43	2.64	E1.19	E12.27	+	10.61
Thermopolis *							
Thermopolis 2	5.15	6.44	2.16	1.58	15.33	+	11.17
Thermopolis 25 WNW	4.28	6.88	E 3.10	1.17	E15.43	+	12.14
mean, n = 4	4.32	5.95	2.47	1.37	14.11	(+2.3)1/	11.81
% by Season	30.6%	42.2%	17.5%	9.7%	100.0%		
% of Normal					119.6%		

*=Recording gauge

1/=Differences of average annual precipitation for all gauges in 1981 from long term average

LE VII. Compilation of 1981 Precipitation (inches) Weighted by Numbers of Gauges, by County and Region for UW-BLM Gauges, Weather Service Stations, and All Combined.

	10/16/80- 4/15/81	4/16/81- 6/30/81	7/1/81- 8/31/81	9/1/81 10/15/81	Total	Diff. from Long Term	Long Term Averages
TION A. BIGHORN DRAINAGE-INCLUDES PARK, BIGHORN, WASHAKIE & HOT SPRINGS COUNTIES							
k County							
UW-BLM Gauges							
mean, n = 19	1.73	4.47	1.08	.49	7.44	-	8.80
% by Season	22.3%	57.6%	13.8%	6.3%	100.0%		
% of Normal					88.3%		
U.S. Stations							
mean, n = 8	2.26	5.54	1.45	.71	9.96	-	10.19
% by Season	22.7%	55.6%	14.6%	7.1%	100.0%		
% of Normal					97.7%		
All Combined							
mean, n = 27	1.89	4.79	1.19	.55	8.42	-	9.21
% by Season	22.5%	56.9%	14.1	6.5	100.0%		
% of Normal					91.4%		
; Horn County							
UW-BLM Gauges							
mean, n = 32	1.90	4.44	1.39	1.35	9.08	+	8.23
% by Season	20.9%	43.9%	15.3%	14.9%	100.0%		
% of Normal					110.3%		
US Stations							
mean, n = 6	1.62	4.19	.95	.87	7.63	+	7.25
% by Season	21.2%	54.9%	12.5%	11.4%	100.0%		
% of Normal					105.2%		
All Combined							
mean, n = 38	1.86	4.40	1.32	1.27	8.85	+	8.08
% by Season	21.0%	49.7%	14.9%	14.4%	100.0%		
% of Normal					109.5%		
hakie County							
UW-BLM Gauges							
mean, n = 27	2.51	4.10	1.32	1.10	9.03	+	8.16
% by Season	27.8%	45.4%	14.6%	12.2%	100.0%		
% of Normal					110.7%		
US Stations							
mean, n = 4	3.30	4.22	1.70	1.12	10.34	+	10.13
% by Season	31.9%	40.8%	16.5%	10.8%	100.0%		
% of Normal					102.1%		
All Combined							
mean, n = 31	2.61	4.12	1.37	1.10	9.20	+	8.41
% by Season	28.3%	44.8%	14.9%	12.0%	100.0%		
% of Normal					109.4%		
: Springs County							
UW-BLM Gauges							
mean, n = 21	3.52	5.51	2.35	1.09	12.47	+	10.54
% by Season	28.2%	44.2%	18.9%	8.7%	100.0%		
% of Normal					117.6%		
US Stations							
mean, n = 4	4.32	5.95	2.47	1.37	14.11	+	11.81
% by Season	30.6%	42.2%	17.5%	9.7%	100.0%		
% of Normal					119.5%		

TABLE VII. (Continued)

	10/16/80-4/15/81	4/16/81-6/30/81	7/1/81-8/31/81	9/1/81 10/15/81	Total	Diff. from Long Term	Long Term Averages
SECTION A. BIGHORN DRAINAGE-INCLUDES PARK, BIGHORN, WASHAKIE & HOT SPRINGS COUNTIES							
All Combined							
mean, n = 25	3.65	5.58	2.37	1.13	12.73	+	10.74
% by Season	28.7%	43.8%	18.6%	8.9%	100.0%		
% of Normal					118.5%		
Four County Summation-Entire Big Horn Basin							
UW-BLM Gauges							
mean, n = 99	2.38	4.58	1.51	1.06	9.53	+	8.81
% by Season	25.0%	48.1%	15.8%	11.1%	100.0%		
% of Normal					108.2%		
US Station							
mean, n = 22	2.65	5.01	1.54	.95	10.15	+	9.67
% by Season	26.1%	49.4%	15.1%	9.4%	100.0%		
% of Normal					105.0%		
All Combined							
mean, n = 121	2.43	4.66	1.51	1.04	9.65	+	8.97
% by Season	25.2%	48.3%	15.7%	10.8%	100.0%		
% of Normal					107.6%		
SECTION B. WIND RIVER DRAINAGE FREMONT COUNTY							
UW-BLM Gauges							
mean, n = 42	2.37	4.29	1.38	1.07	9.11	+	8.42
% by Season	26.0%	47.1%	15.1%	11.8%	100.0%		
% of Normal					108.2%		
US Stations							
mean, n = 22	2.95	3.83	1.85	.95	9.58	-	10.10
% by Season	30.8%	40.0%	19.3%	9.9%	100.0%		
% of Normal					94.8%		
All Combined							
mean, n = 64	2.57	4.13	1.54	1.03	9.27	+	9.00
% by Season	27.7%	44.6%	16.6%	11.1%	100.0%		
% of Normal					103.0%		
SECTION C. PLATTE RIVER DRAINAGE-INCLUDES NATRONA & CARBON COUNTIES							
UW-BLM Gauges-Natrona County							
mean, n = 8	3.58	3.47	2.23	.64	9.92	+	9.08
% by Season	36.1%	35.0%	22.5%	6.4%	100.0%		
% of Normal					109.2%		
UW-BLM Gauges-Carbon County							
mean, n = 13	3.91	3.98	1.53	3.13	12.55	+	9.22
% by Season	31.2%	31.7%	12.2%	24.9%	100.0%		
% of Normal					136.1%		
US Stations-Identified as Platte River Drainage							
mean, n = 11	4.16	4.42	2.66	1.50	12.74	+	11.17
% by Season	32.6%	34.7%	20.9%	11.8%	100.0%		
% of Normal					114.0%		
All Combined							
mean, n = 32	3.91	4.00	2.09	1.95	11.95	+	9.86
% by Season	32.7%	33.5%	17.5%	16.3%	100.0%		
% of Normal					121.2%		

LE VII. (Continued)

	10/16/80- 4/15/81	4/16/81- 6/30/81	7/1/81- 8/31/81	9/1/81 10/15/81	Total	Diff. from Long Term	Long Term Averages
TION D. GREEN RIVER DRAINAGE-INCLUDES SWEETWATER, SUBLETTE, UINTA & LINCOLN COUNTIES							
etwater County							
UW-BLM Gauges							
mean, n = 15	2.71	3.59	.89	1.82	9.01	+	8.08
% by Season	30.1%	39.8%	9.9%	20.2%	100.0%		
% of Normal					111.5%		
US Stations							
mean, n = 5	2.55	2.66	1.23	1.44	7.88	+	7.56
% by Season	32.4%	33.7%	15.6%	18.3%	100.0%		
% of Normal					104.2%		
All Combined							
mean, n = 20	2.67	3.36	.98	1.72	8.73	+	7.95
% by Season	30.6%	38.5%	11.2%	19.7%	100.0%		
% of Normal					109.8%		
lette County							
UW-BLM Gauges							
mean, n = 4	2.33	3.04	1.04	.92	7.33	+	6.72%
% by Season	31.8%	41.5%	14.2%	12.5%	100.0%		
% of Normal					109.2%		
US Stations							
mean, n = 4	2.96	3.51	1.48	1.26	9.21	-	10.63
% by Season	32.1%	38.1%	16.1%	13.7%	100.0%		
% of Normal					86.6%		
All Combined							
mean, n = 8	2.64	3.28	1.26	1.09	8.27	-	8.68
% by Season	31.9%	39.7%	15.2%	13.2%	100.0%		
% of Normal					95.3%		
ta County							
UW-BLM Gauges							
mean, n = 2	2.38	2.66	.35	.61	6.00	-	7.94
% by Season	39.7%	44.3%	5.8%	10.2%	100.0%		
% of Normal					75.6%		
US Stations							
mean, n = 2	3.83	2.85	.50	1.72	8.90	-	9.88
% by Season	43.1%	32.0%	5.6%	19.3%	100.0%		
% of Norman					90.1%		
All Combined							
mean, n = 4	3.11	2.76	.42	1.16	7.45	-	8.91
% by Season	41.7%	37.1%	5.6%	15.6%	100.0%		
% of Normal					83.6%		
coln County							
UW-BLM Gauges							
mean, n = 7	3.52	2.82	.51	.83	7.68	-	10.19
% by Season	45.9%	36.7%	6.6%	10.8%	100.0%		
% of Normal					75.4%		
US Stations							
mean, n = 3	2.85	2.62	.79	1.54	7.80	-	8.79
% by Season	36.5%	33.6%	10.1%	19.8%	100.0%		
% of Normal					88.7%		

TABLE VII. (Continued)

	10/16/80- 4/15/81	4/16/81- 6/30/81	7/1/81- 8/31/81	9/1/81 10/15/81	Total	Diff. from Long Term	Long Term Averages
SECTION D. GREEN RIVER DRAINAGE-INCLUDES SWEETWATER, SUBLETTE, UINTA & LINCOLN COUNTIES							
Sweetwater County (Continued)							
All Combined UW-BLM Gauges & US Weather Stations							
mean, n = 10	3.32	2.76	.60	1.04	7.72	-	9.77
% by Season	43.0%	35.8%	7.8%	13.4%	100.0%		
% of Normal					79.0%		
UW-BLM Gauges-Four County Summation							
mean, n = 28	2.83	3.25	.78	1.35	8.22	-	8.40
% by Season	34.4%	39.6%	9.5%	16.5%	100.0%		
% of Normal					97.8%		
Green River Drainage - US Stations - Summation							
mean, n = 14	2.91	2.92	1.11	1.45	8.39	-	9.03
% by Season	34.8%	34.8%	13.2%	17.2%	100.0%		
% of Normal					93.0%		
All Combined - Four County Green River Drainage UW-BLM & USWS							
mean, n = 42	2.86	3.14	.89	1.39	8.28	-	8.61
% by Season	34.5%	37.9%	10.8%	16.8%	100.0%		
% of Normal					96.2%		
TOTAL STATE UW-BLM GAUGES							
mean, n = 190	2.60	4.23	1.41	1.23	9.47	+	8.68
% by Season	27.4%	44.7%	14.9%	13.0%	100.0		
% of Normal					109.1%		
TOTAL US - BIG HORN, WIND RIVER, PLATTE RIVER & GREEN RIVER DRAINAGES							
mean, n = 60	3.05	4.16	1.71	1.17	10.09	+	9.89
% by Season	30.2%	41.2%	17.0%	11.6%	100.0		
% of Normal					102.0%		
TOTAL ALL UW-BLM & US STATIONS							
mean, n = 250	2.71	4.21	1.48	1.22	9.62	+	8.86
% by Season	28.2%	43.7%	15.4%	12.7%	100.0%		
% of Normal					108.6%		

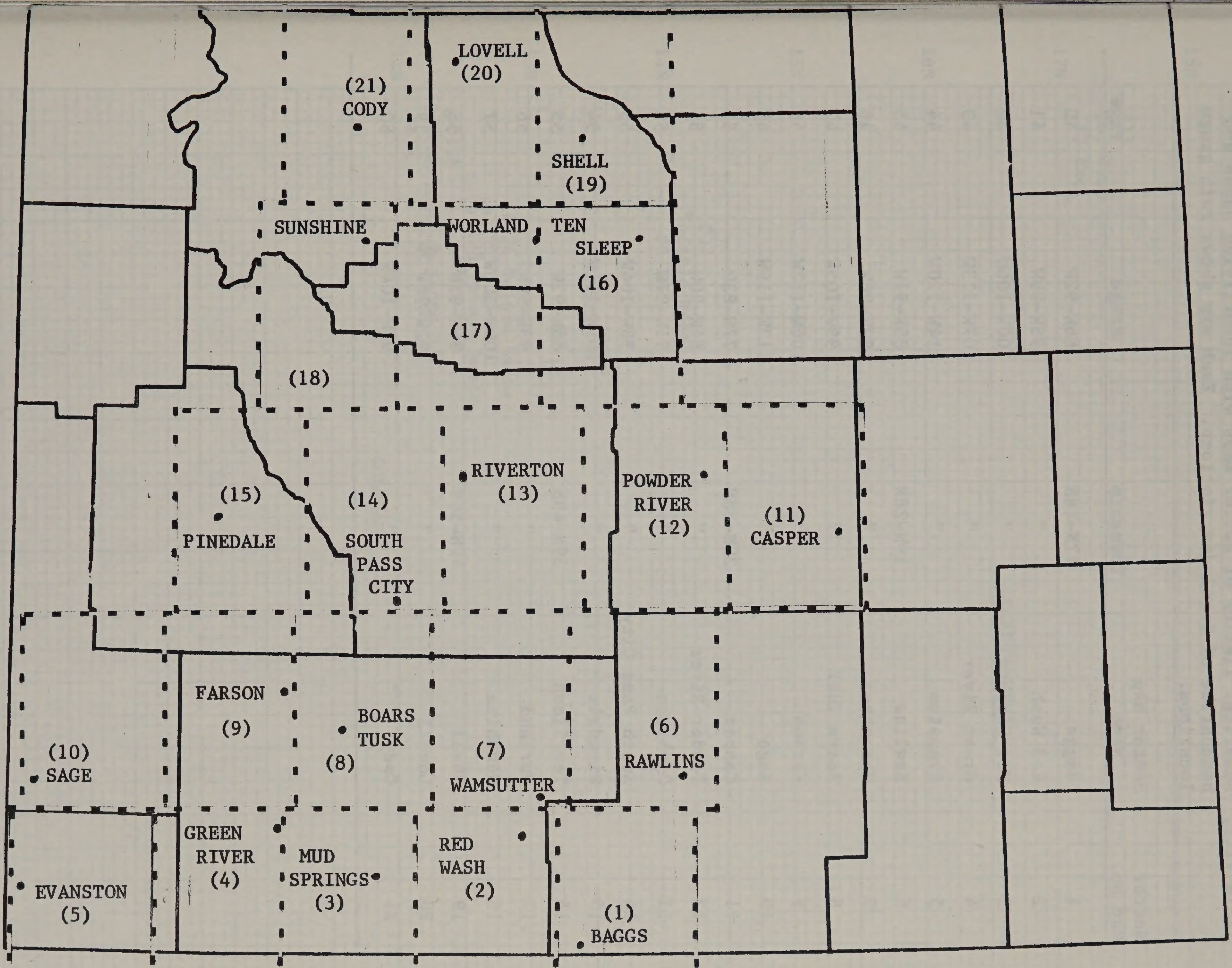
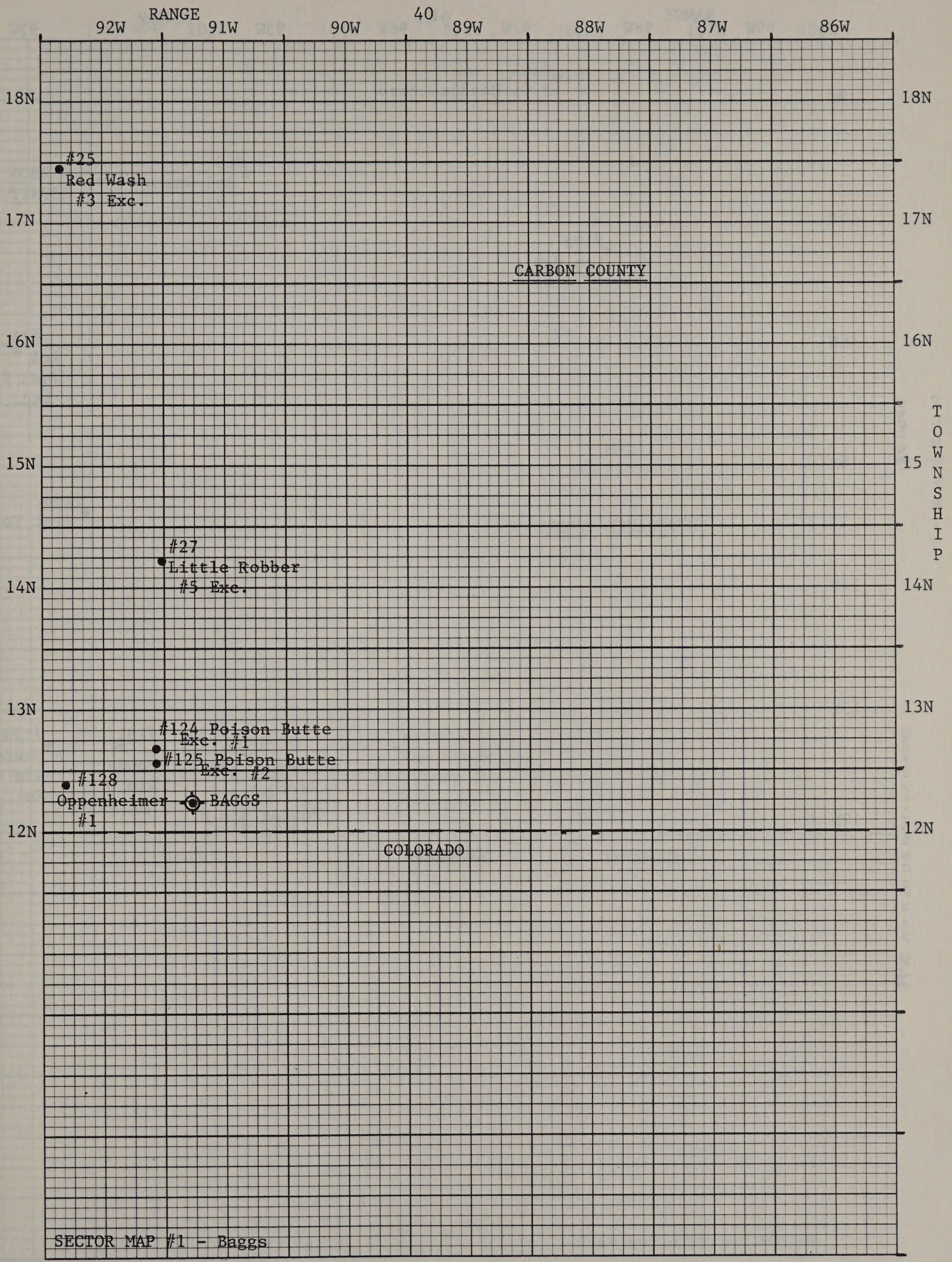


Figure 1. Map of Wyoming with index of sector map locations, names, and numerical designation.
Scale: 1 inch = 42 miles.

Table VIII. Numerical listing of sector maps with identifying names and boundaries of legal descriptions. Each map shows rain gauge locations.

Sector Map No.	Sector Map Name	Township	Range	Page
1	Baggs	12N-18N	86W-92W	40
2	Red Wash	"	93W-99W	41
3	Mud Springs	"	100W-106W	42
4	Green River	"	107W-113W	43
5	Evanston	"	114W-120W	44
6	Rawlins	19N-28N	85W-91W	45
7	Wamsutter	"	92W-98W	46
8	Boars Tusk	"	99W-105W	47
9	Farson	"	106W-112W	48
10	Sage	"	113W-119W	49
11	Casper	29N-38N	77W-83W	50
12	Powder River	"	84W-90W	51
13	Riverton	"	91W-97W	52
14	South Pass City	"	98W-104W	53
15	Pinedale	"	105W-111W	54
16	Ten Sleep	39N-48N	86W-92W	55
17	Worland	"	93W-99W	56
18	Sunshine	"	100W-106W	57
19	Shell	49N-58N	86W-92W	58
20	Lovell	"	92W-98W	59
21	Cody	"	98W-104W	60



SECTOR MAP #1 - Baggs

● Location of University of Wyoming and BLM rain gauges

⊕ Location of U.S. Weather Bureau Stations

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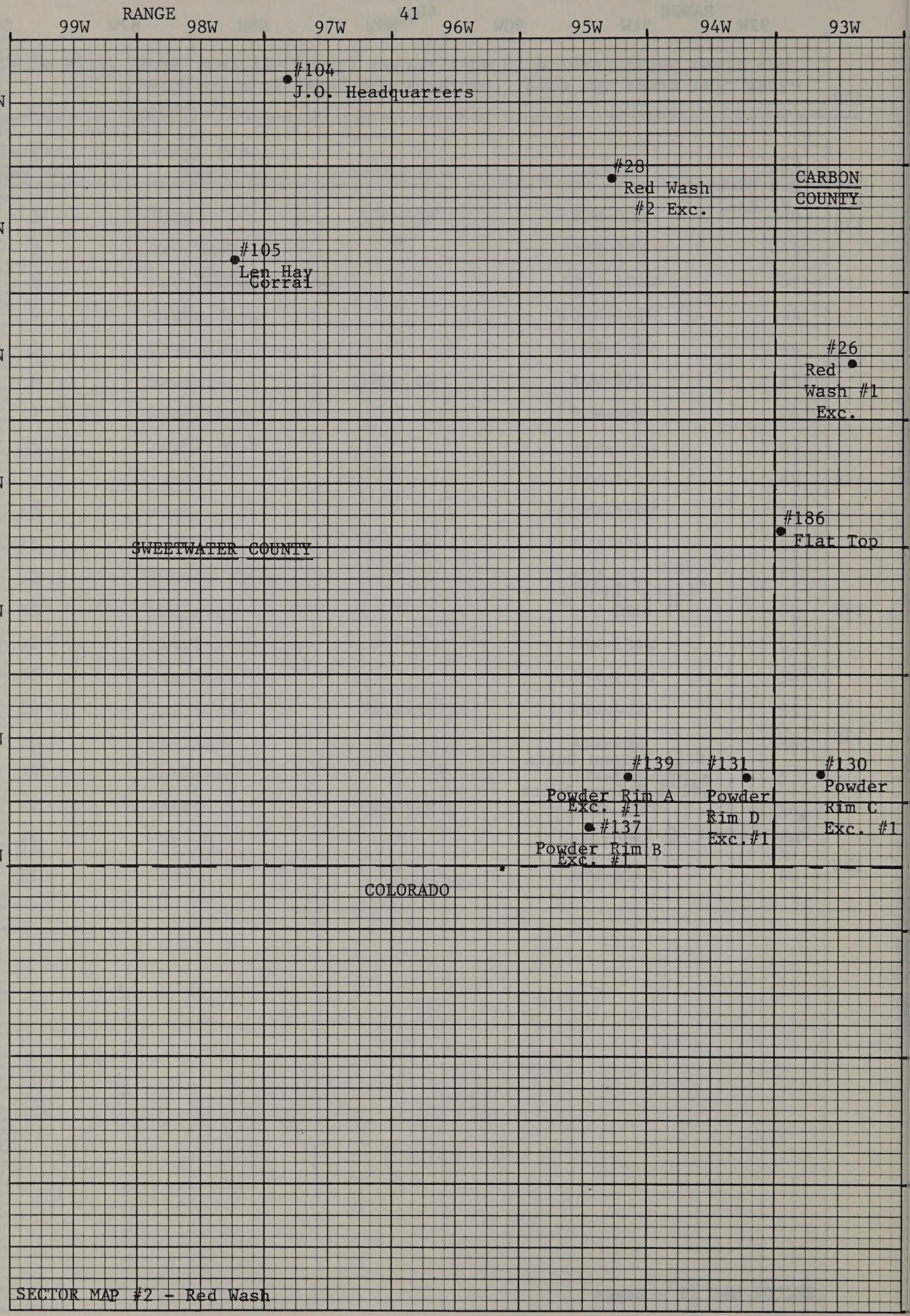

SECTOR MAP #2 - Red Wash

● Location of University of Wyoming and BLM rain gauges

⊕ Location of U.S. Weather Bureau Stations

46 0940
K+E 12 X 12 TO THE INCH • 7 X 10 INCHES
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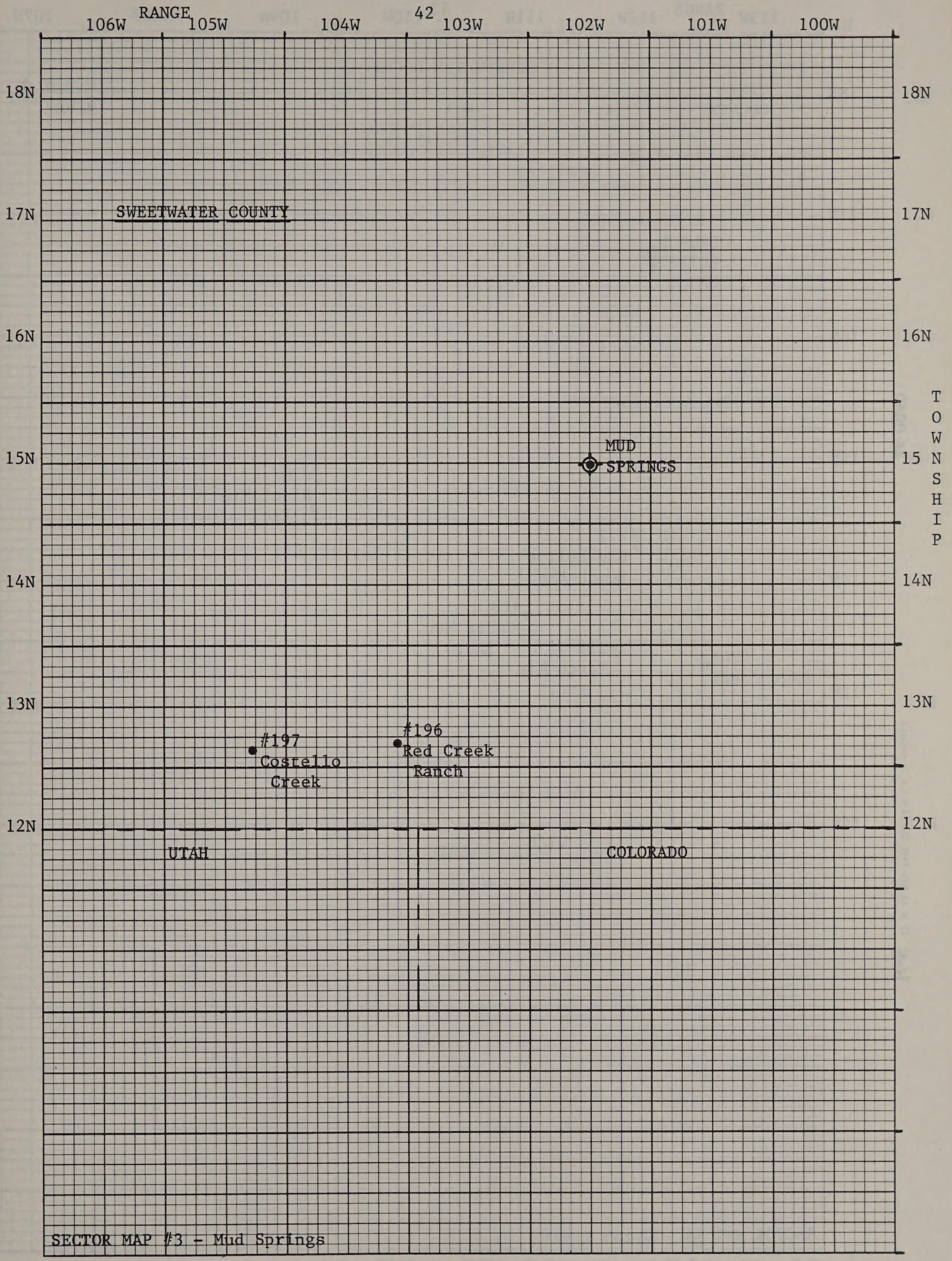

SECTOR MAP #3 - Mud Springs

● Location of University of Wyoming and BLM rain gauges

◉ Location of U.S. Weather Bureau Stations

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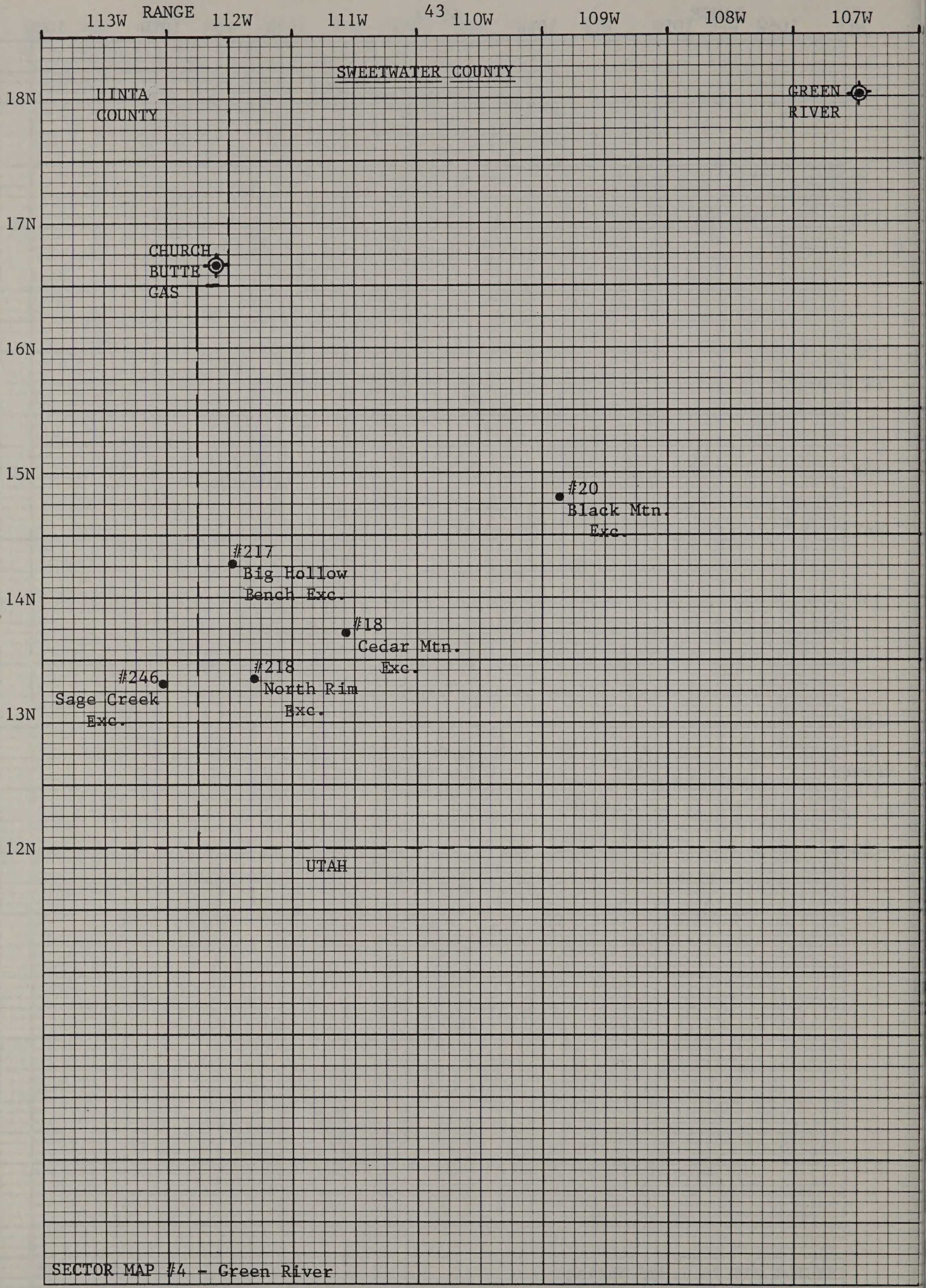

SECTOR MAP #4 - Green River

● Location of University of Wyoming and BLM rain gauges

⌖ Location of U.S. Weather Bureau Stations

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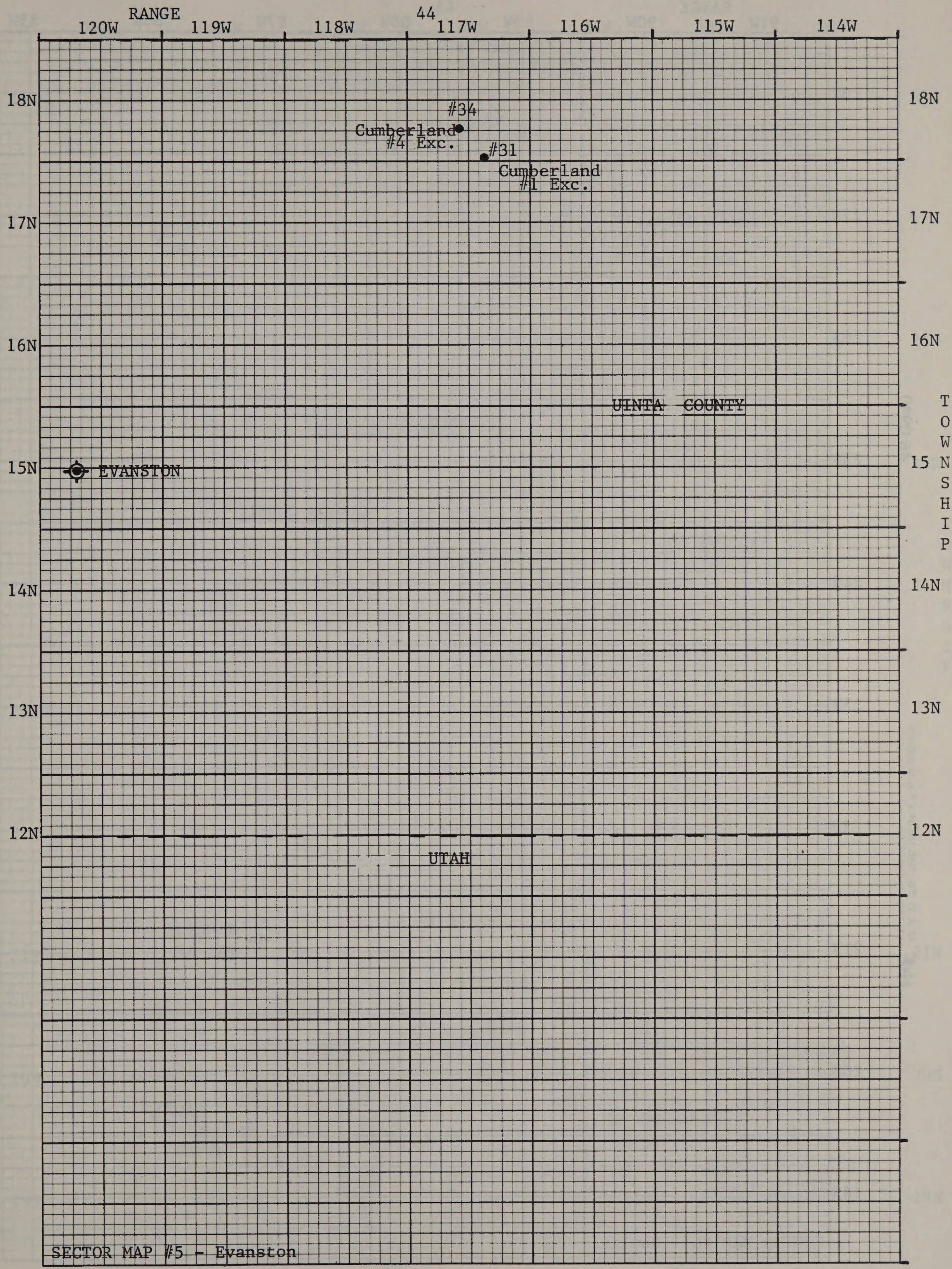
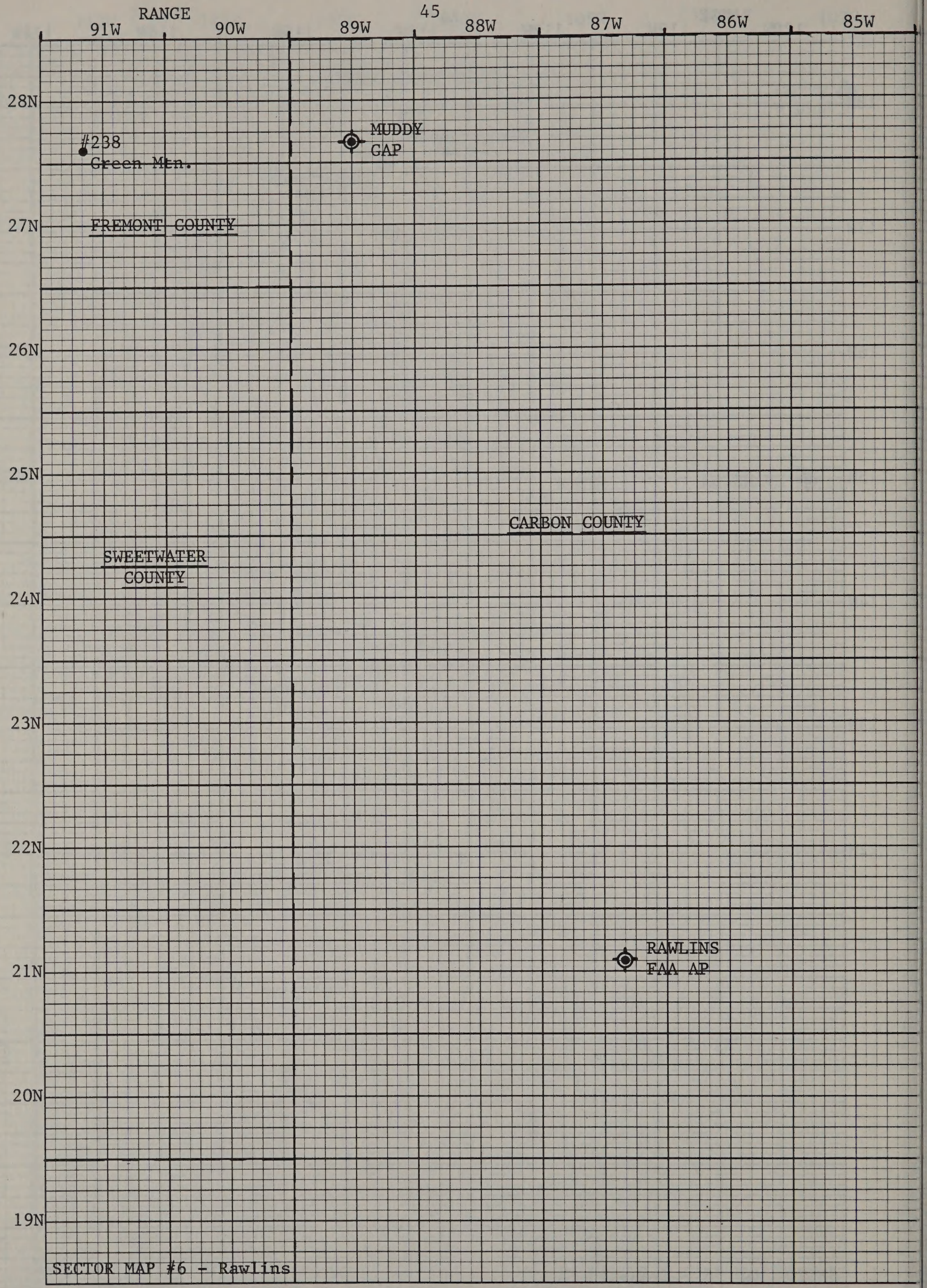


SECTOR MAP #5 - Evanston

● Location of University of Wyoming and BLM rain gauges

⊕ Location of U.S. Weather Bureau Stations



SECTOR MAP #6 - Rawlins

- ● Location of University of Wyoming and BLM rain gauges
- ⊕ Location of U.S. Weather Bureau Stations

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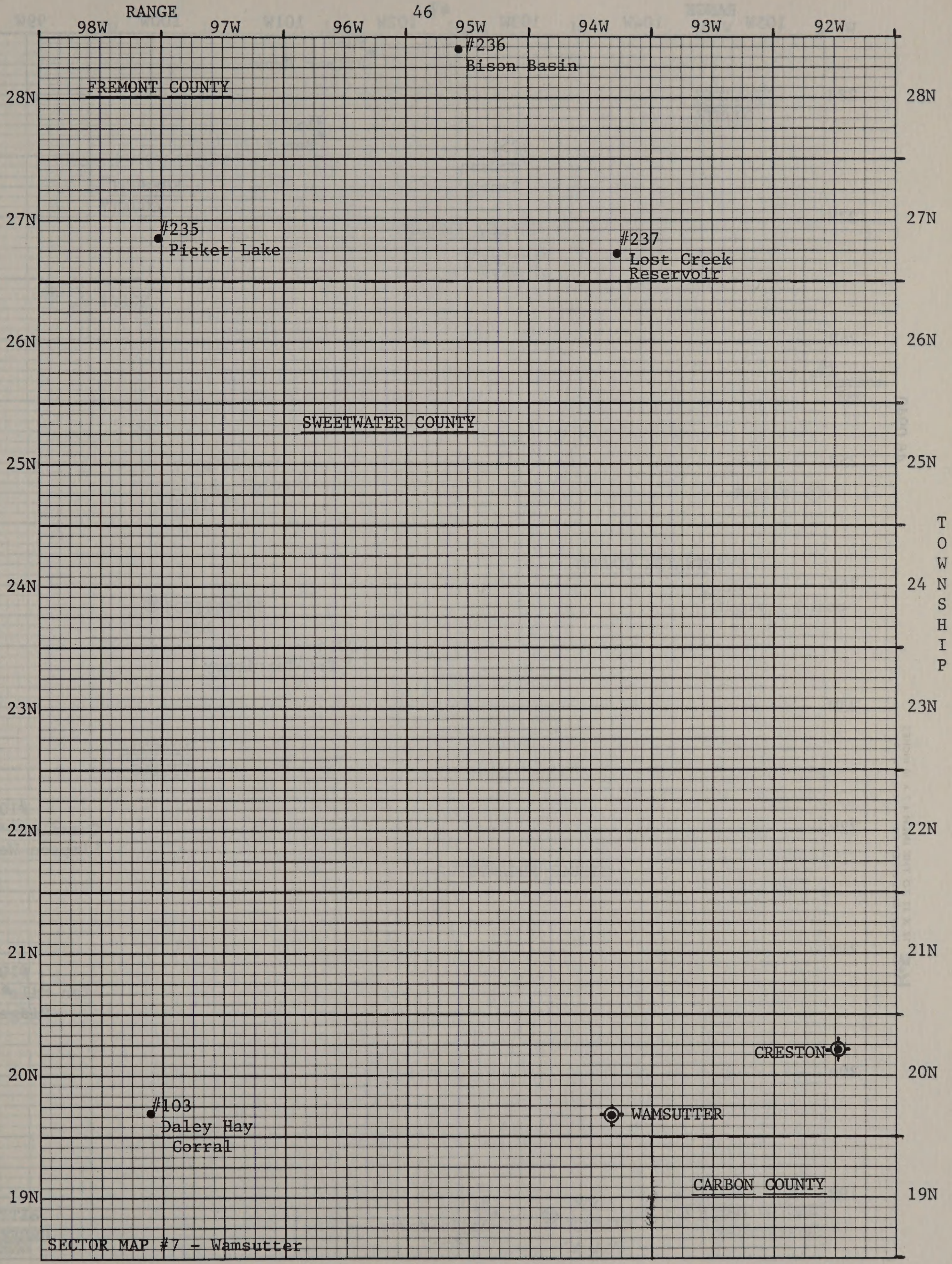
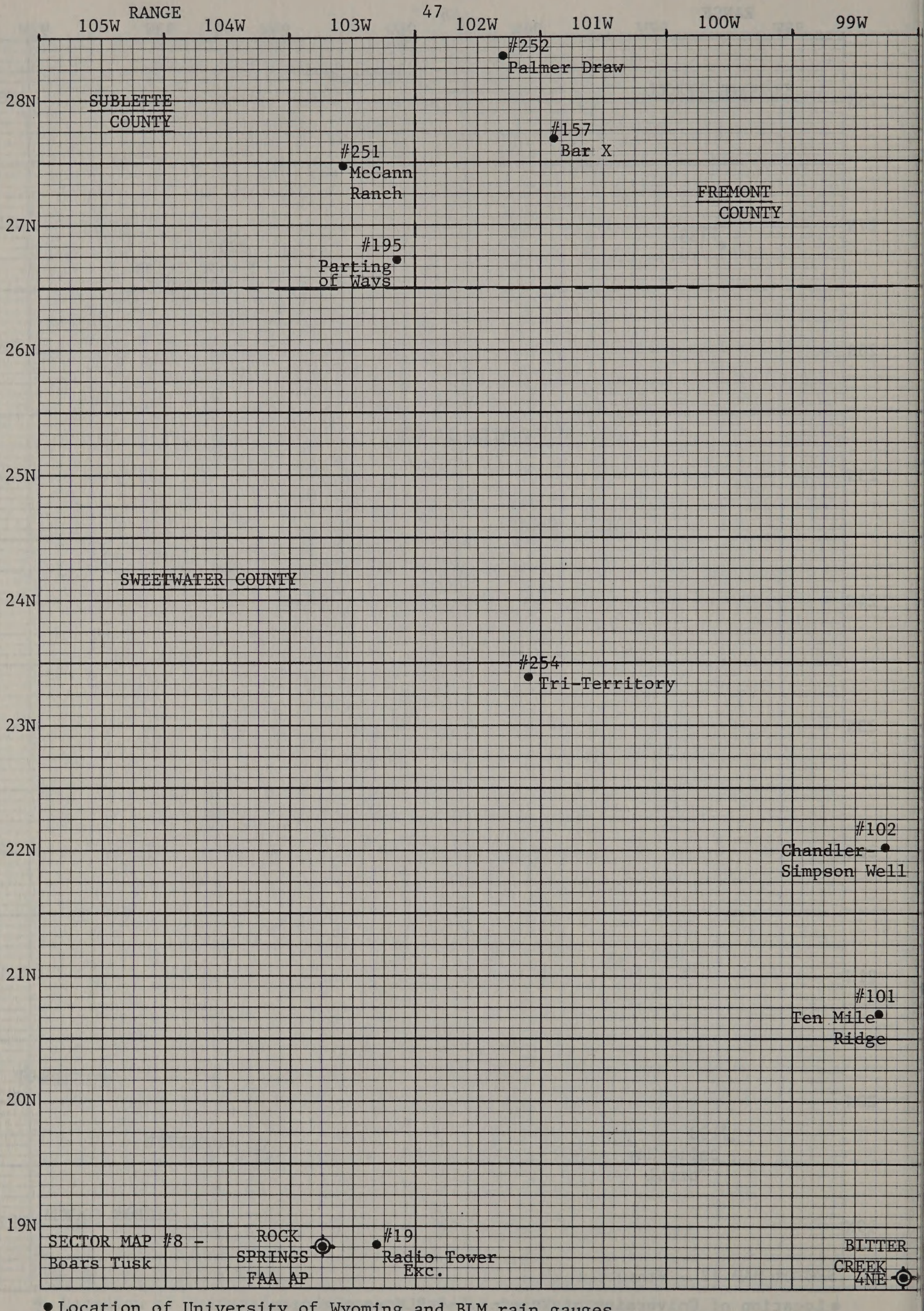


SECTOR MAP #7 - Wamsutter

● Location of University of Wyoming and BLM rain gauges

⌖ Location of U.S. Weather Bureau Stations



SECTOR MAP #8 – Boars Tusk

● Location of University of Wyoming and BLM rain gauges

⌖ Location of U.S. Weather Bureau Stations

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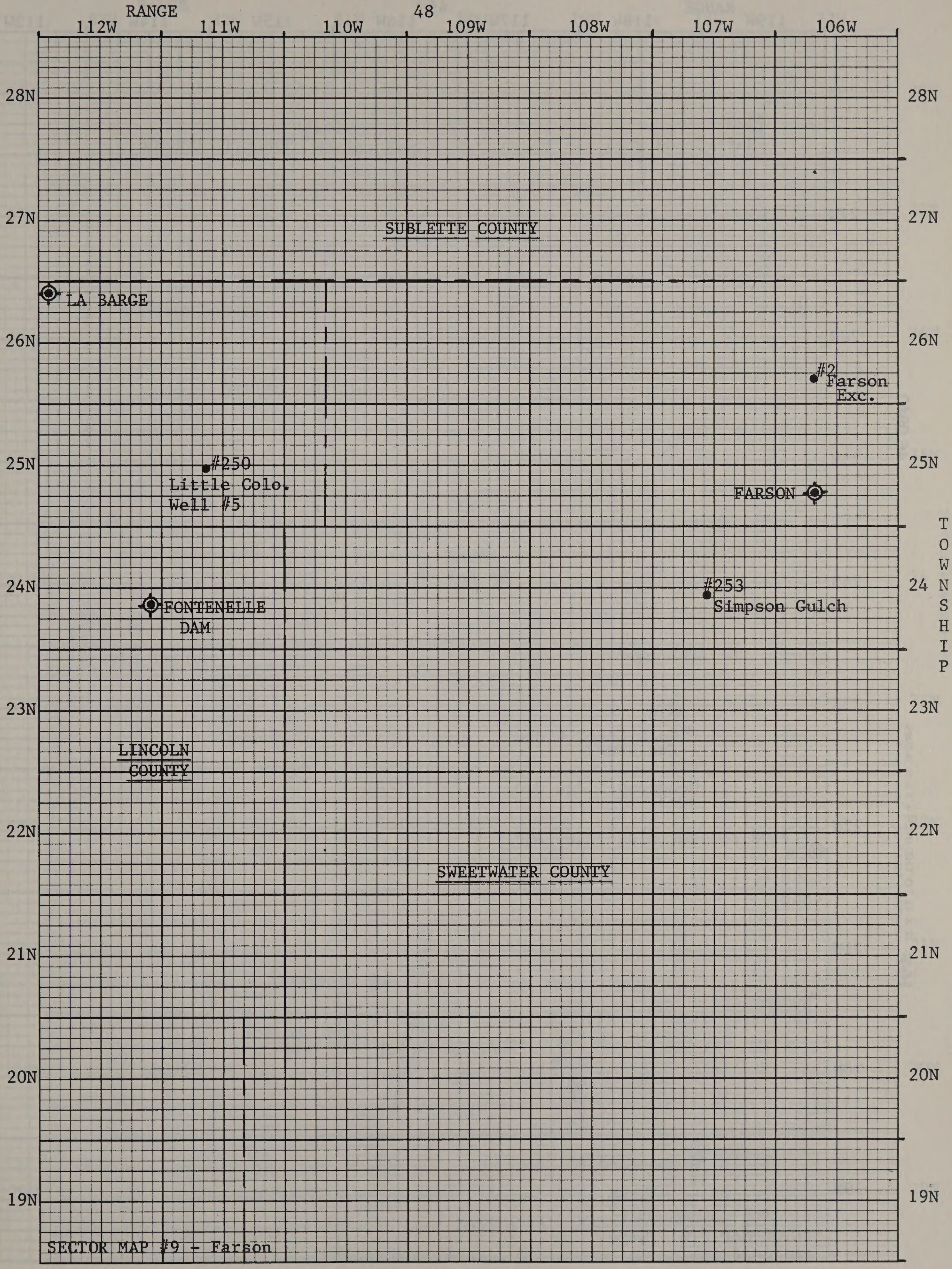
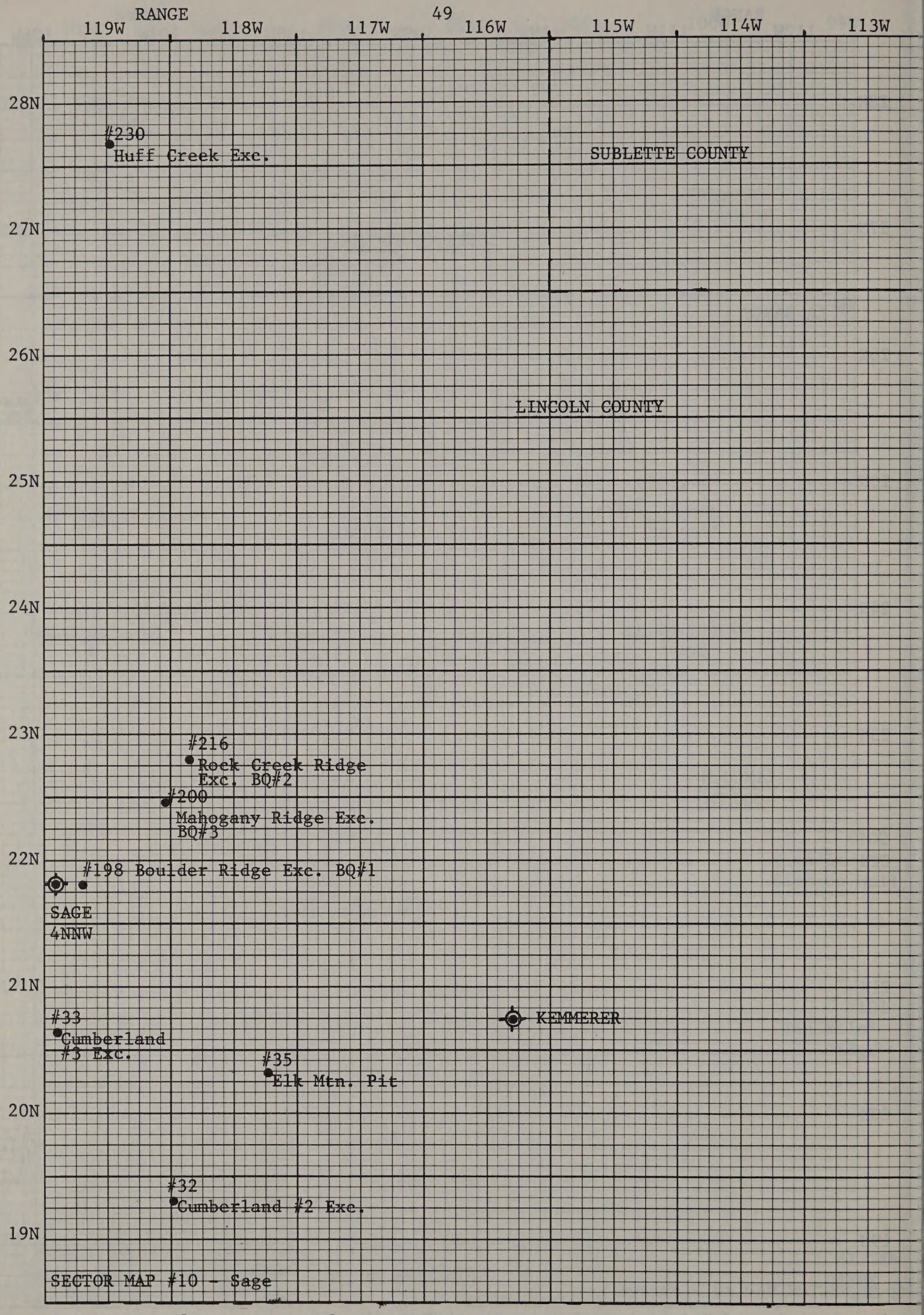


SECTOR MAP #9 - Farson

● Location of University of Wyoming and BLM rain gauges

⊕ Location of U.S. Weather Bureau Stations



SECTOR MAP #10 - Sage

● Location of University of Wyoming and BLM rain gauges

⌖ Location of U.S. Weather Bureau Stations

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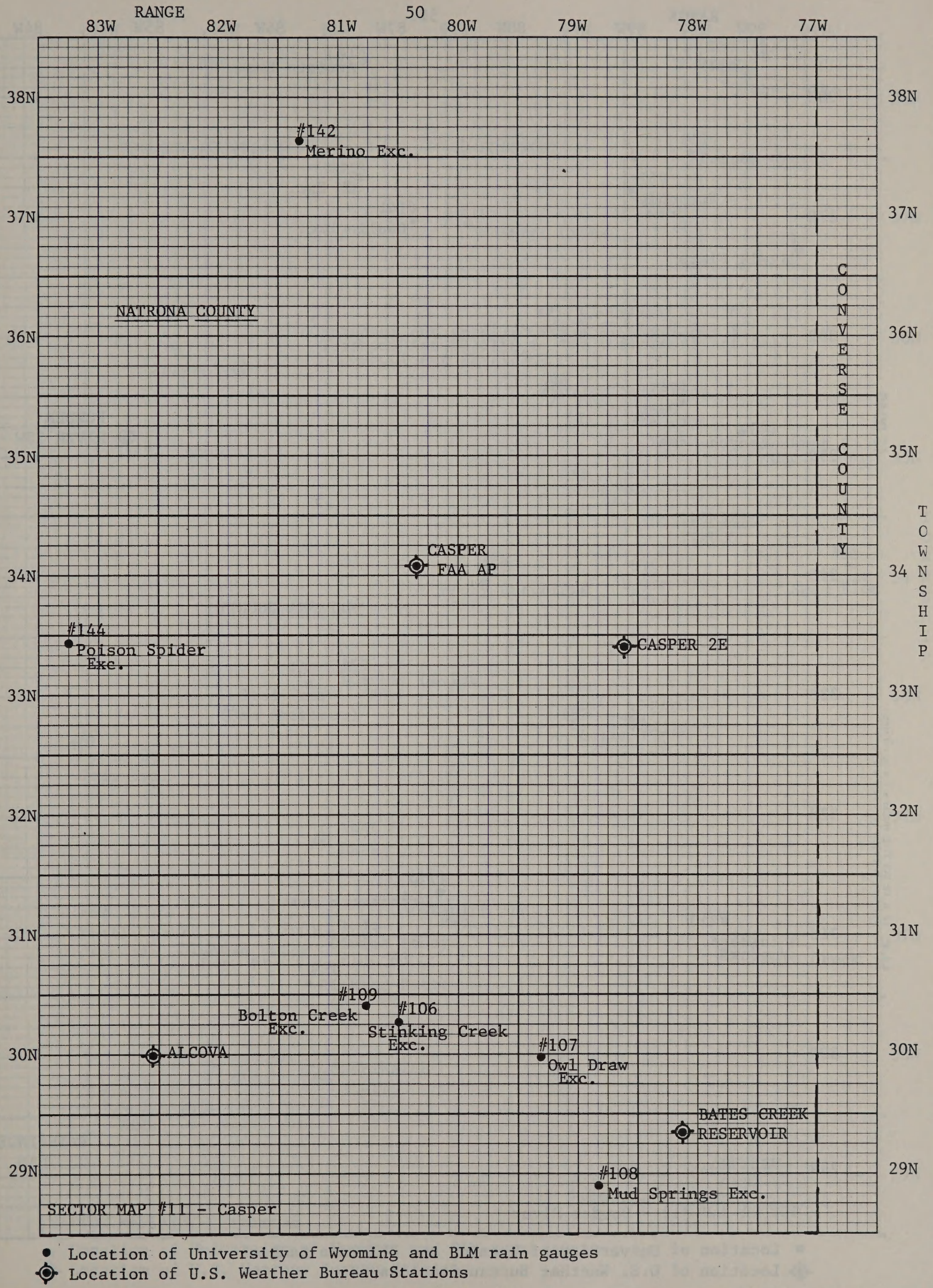
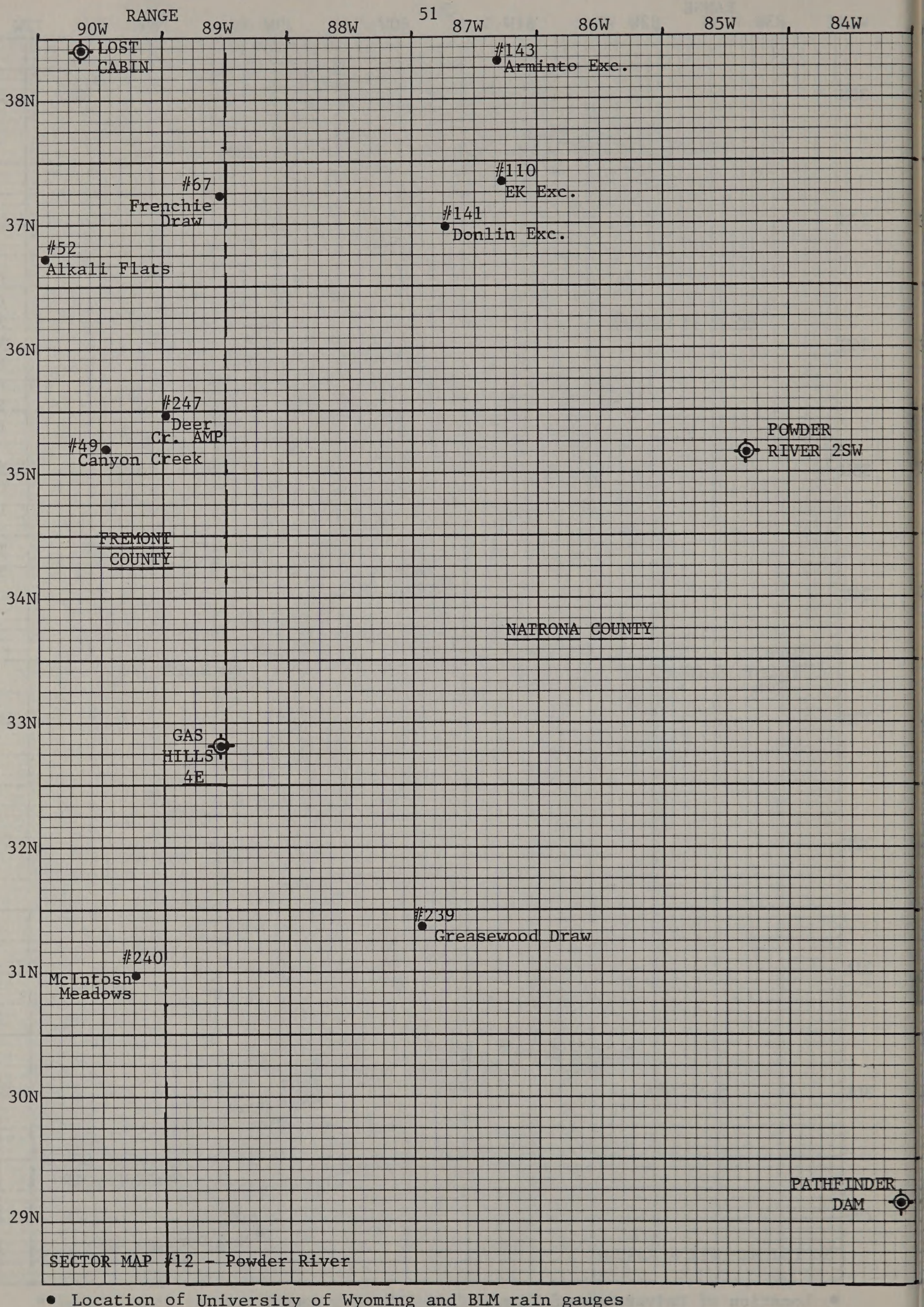


SECTOR MAP #11 - Casper



SECTOR MAP #12 - Powder River

● Location of University of Wyoming and BLM rain gauges

⊕ Location of U.S. Weather Bureau Stations

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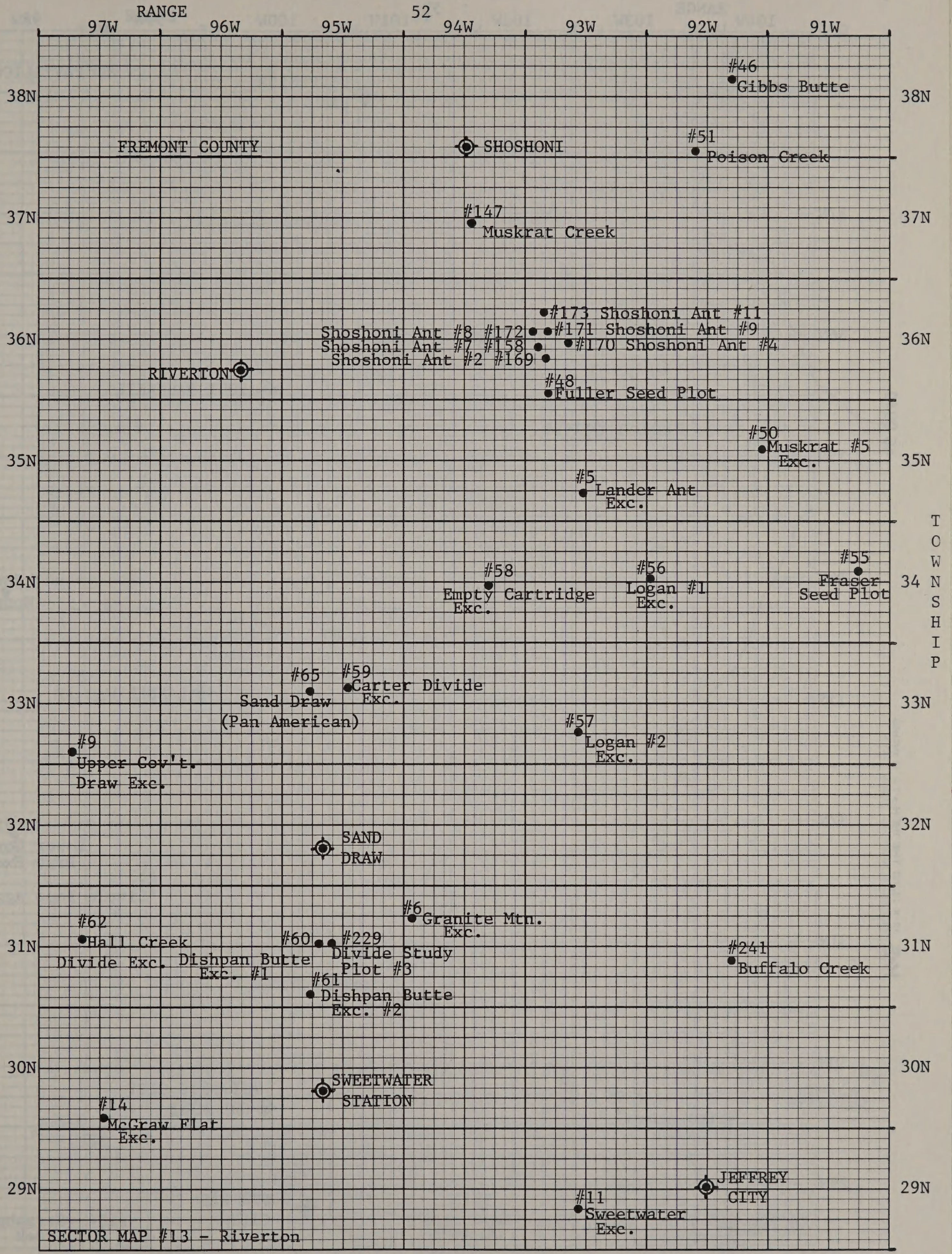
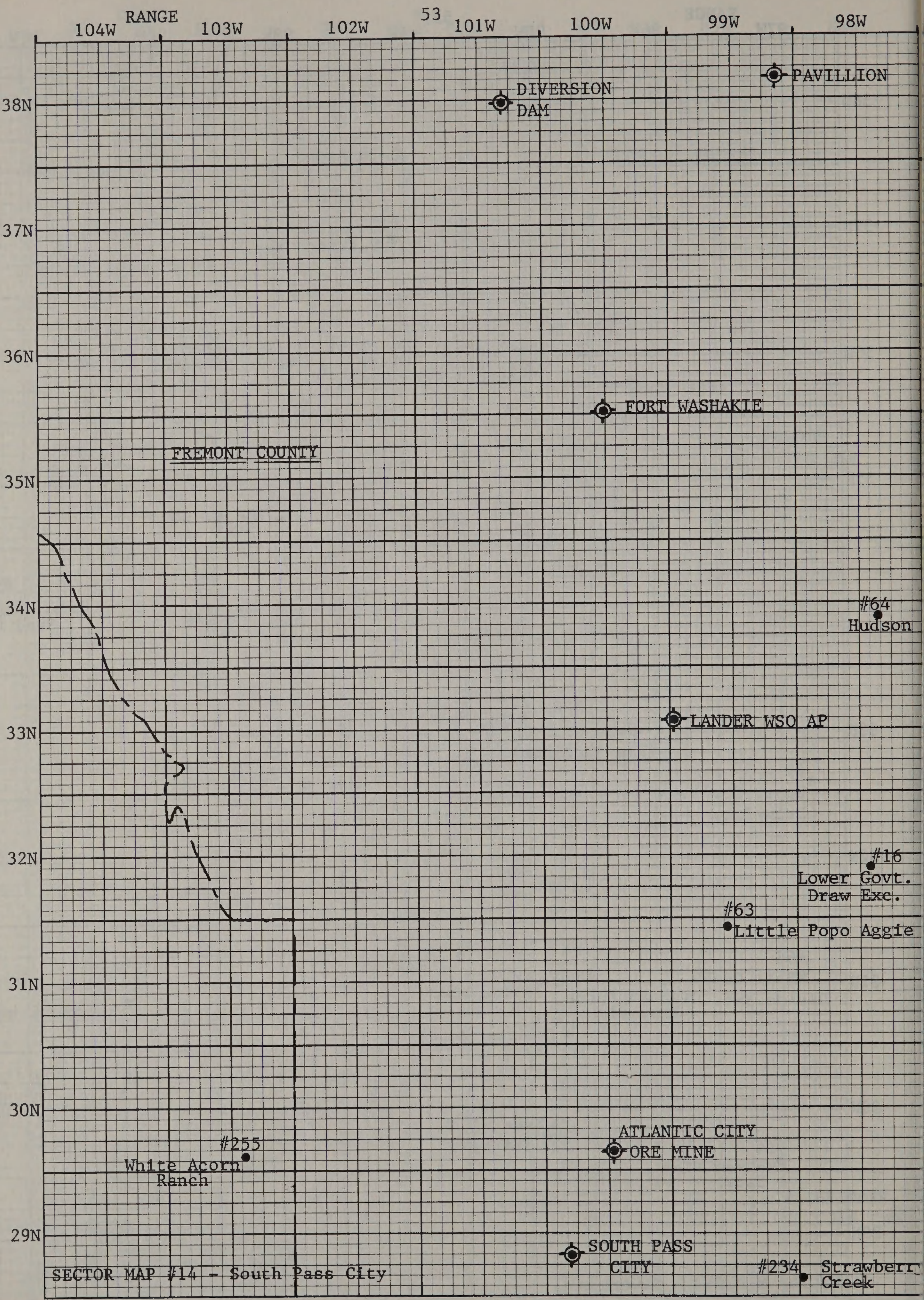


SECTOR MAP #13 - Riverton

● Location of University of Wyoming and BLM rain gauges

⌖ Location of U.S. Weather Bureau Stations


SECTOR MAP #14 - South Pass City

● Location of University of Wyoming and BLM rain gauges
⊕ Location of U.S. Weather Bureau Stations

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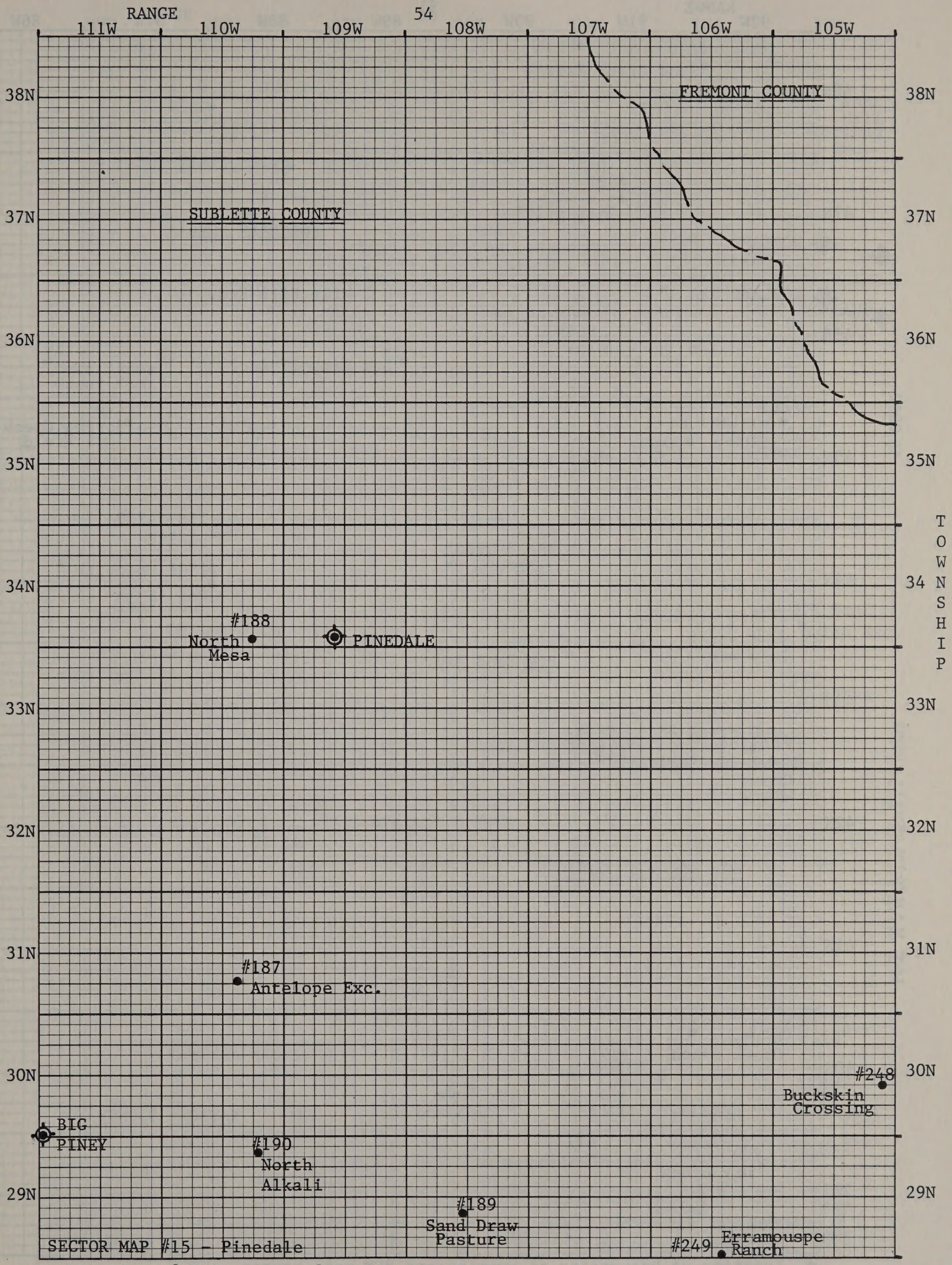

SECTOR MAP #15 - Pinedale

● Location of University of Wyoming and BLM rain gauges

⊕ Location of U.S. Weather Bureau Stations

46 0940

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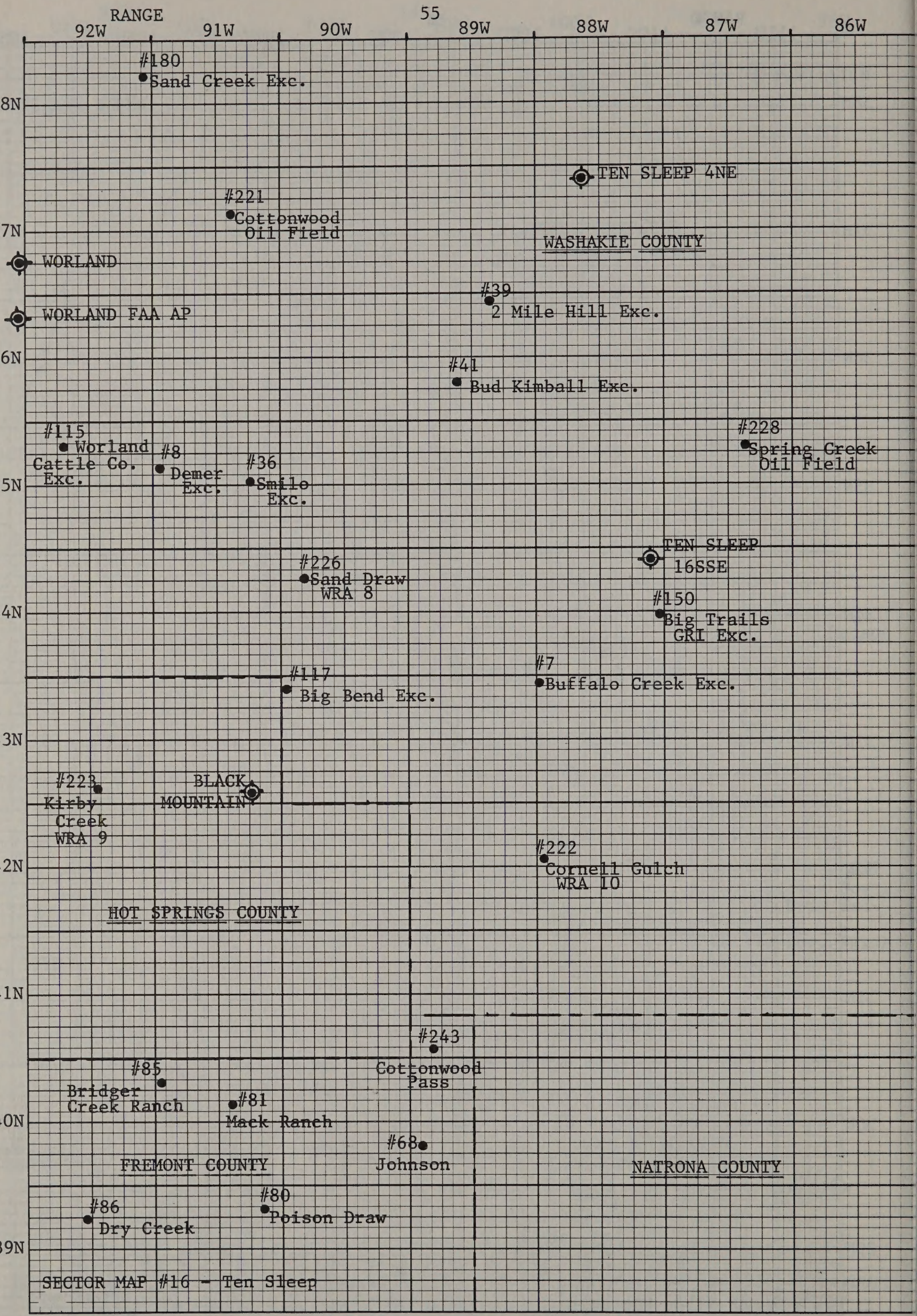
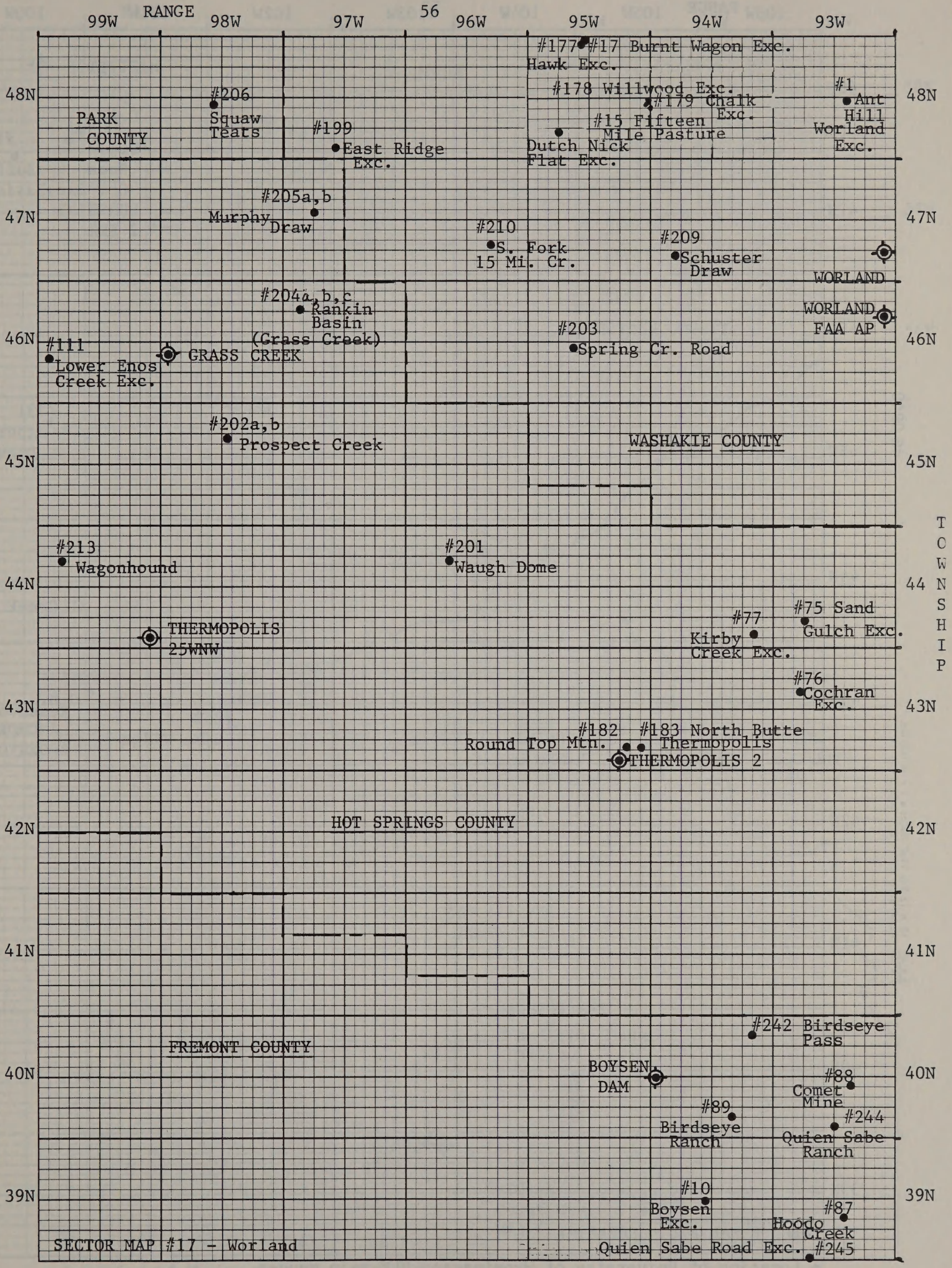


SECTOR MAP #16 - Ten Sleep

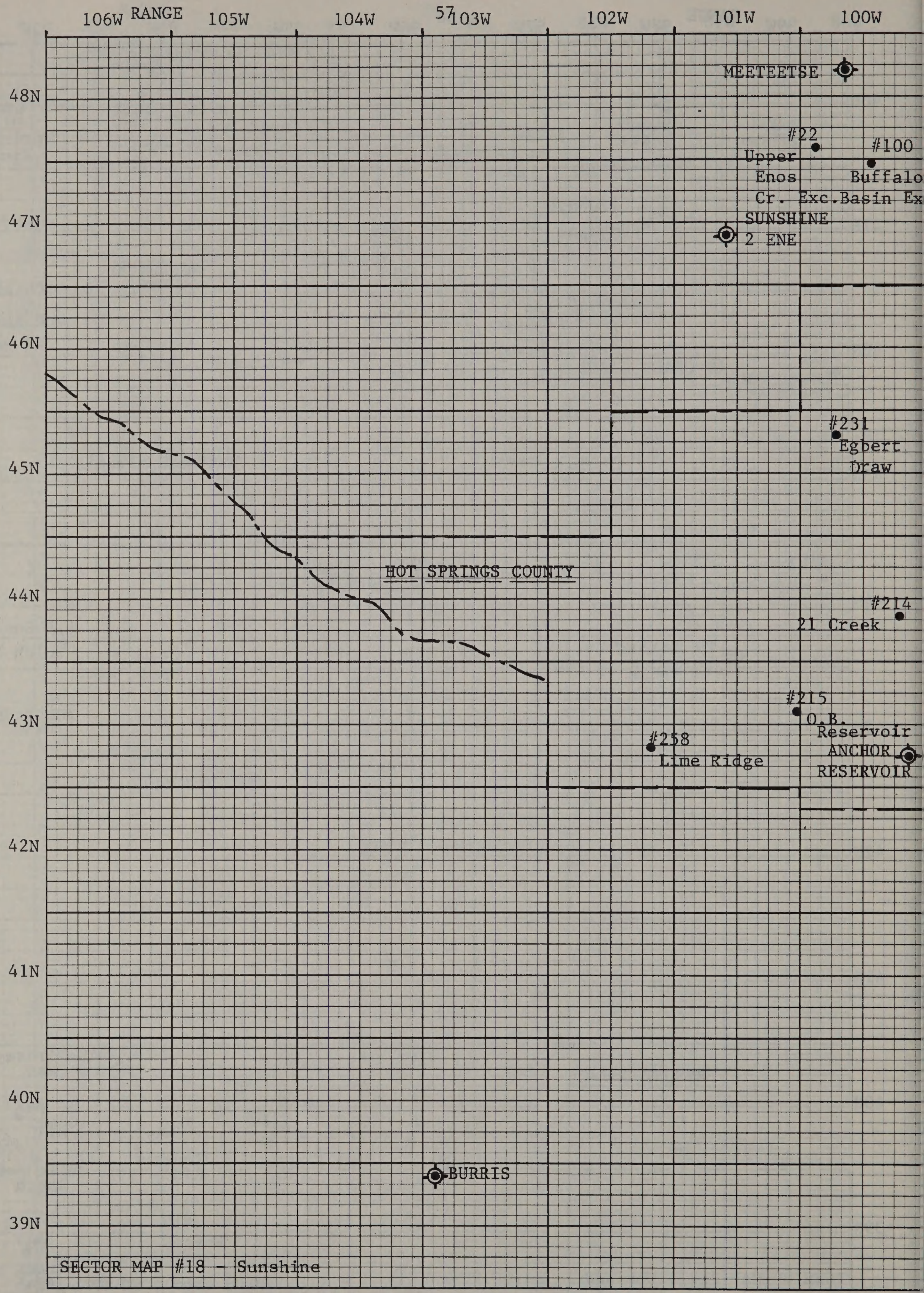
- ● Location of University of Wyoming and BLM rain gauges
- ⊕ Location of U.S. Weather Bureau Stations



SECTOR MAP #17 - Worland

● Location of University of Wyoming and BLM rain gauges

⌖ Location of U.S. Weather Bureau Stations



SECTOR MAP #18 - Sunshine

● Location of University of Wyoming and BLM rain gauges

⊕ Location of U.S. Weather Bureau Stations

46 0940

K+E 12 X 12 TO THE INCH • 7 X 10 INCHES
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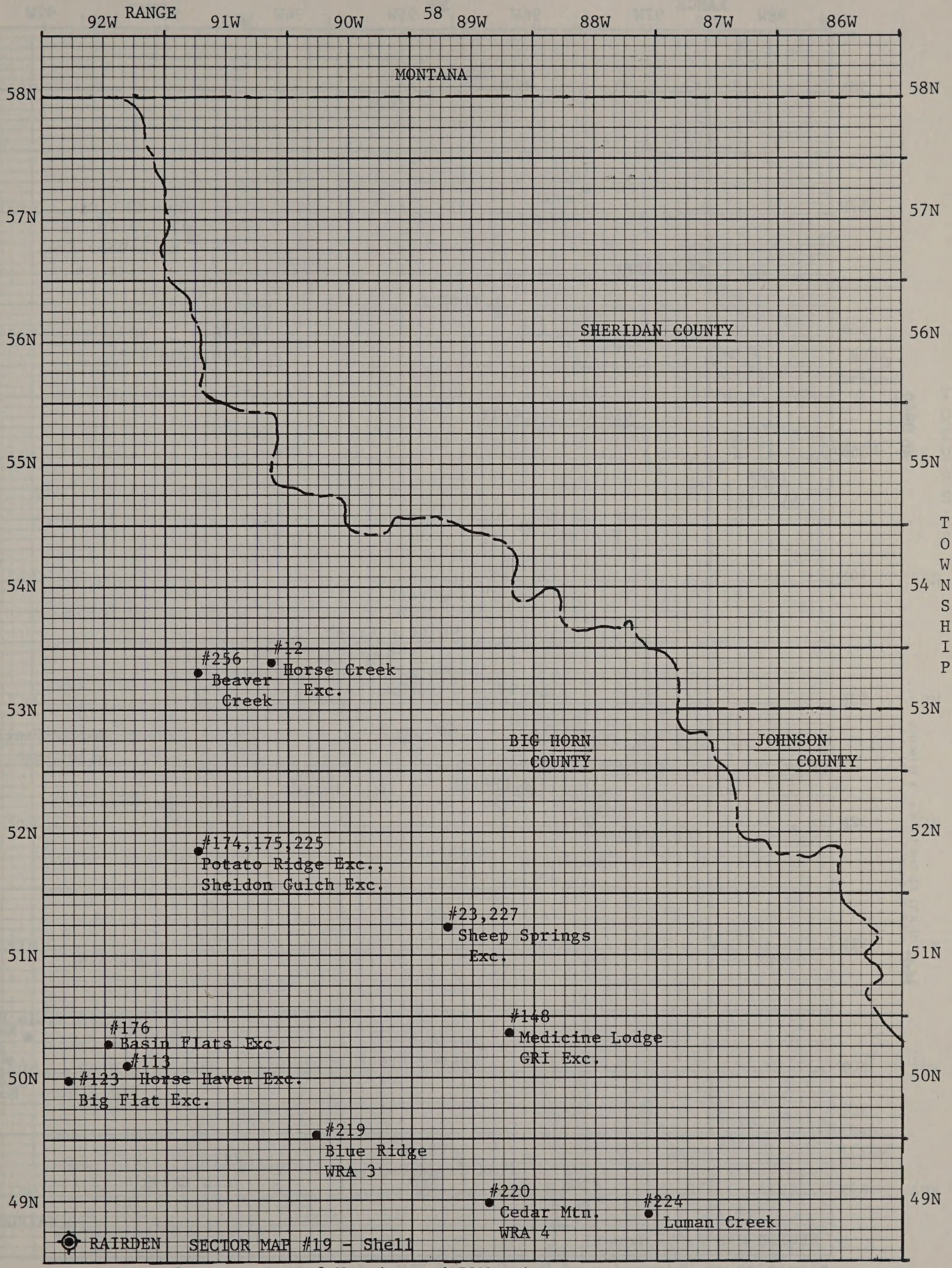
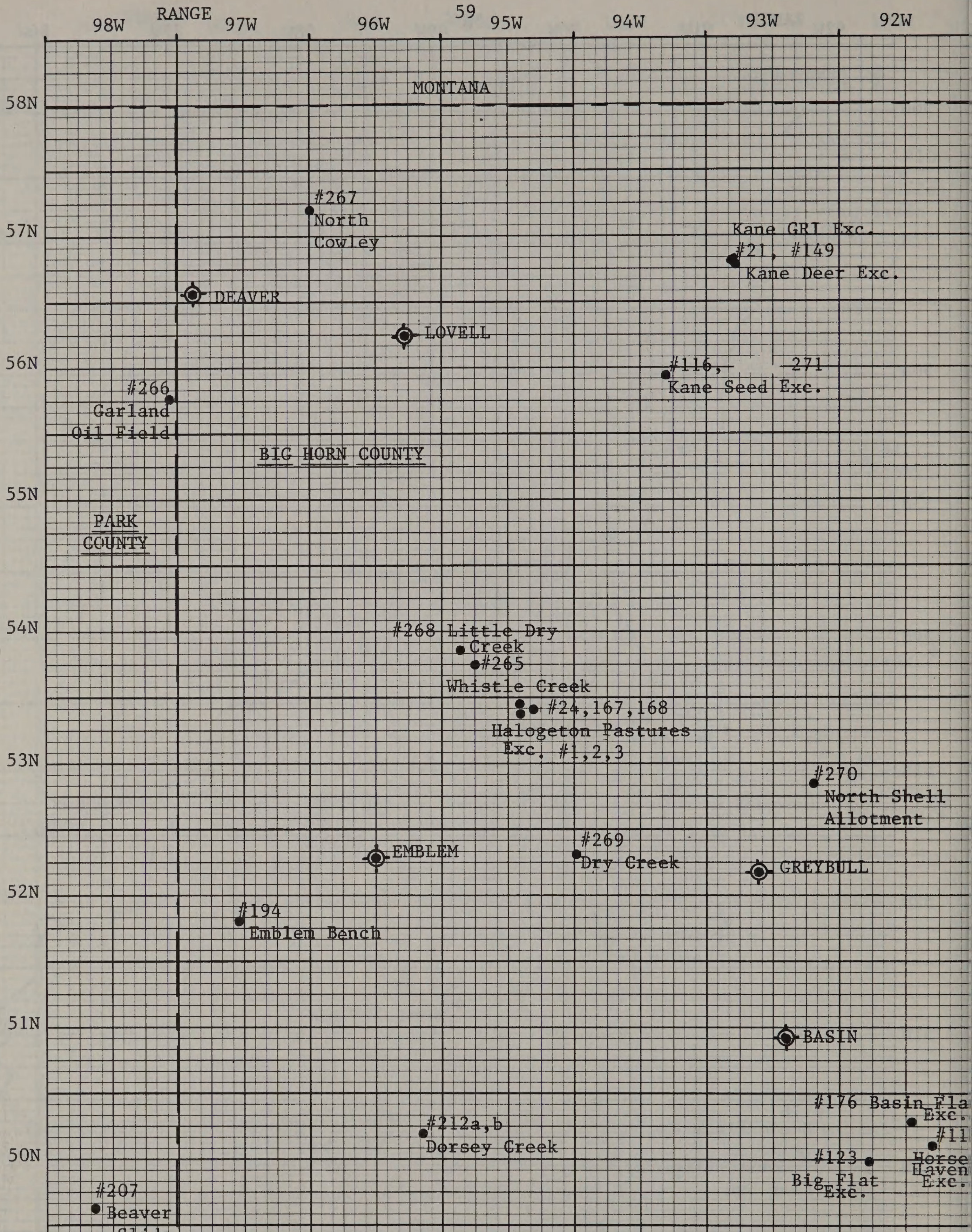


SECTOR MAP #19 - Shell

- ● Location of University of Wyoming and BLM rain gauges
- ⯐ Location of U.S. Weather Bureau Stations



SECTOR MAP #20 - Lovell

●Location of University of Wyoming and BLM rain gauges

⌖ Location of U.S. Weather Bureau Stations

46 0940

K+E 12 X 12 TO THE INCH • 7 X 10 INCHES
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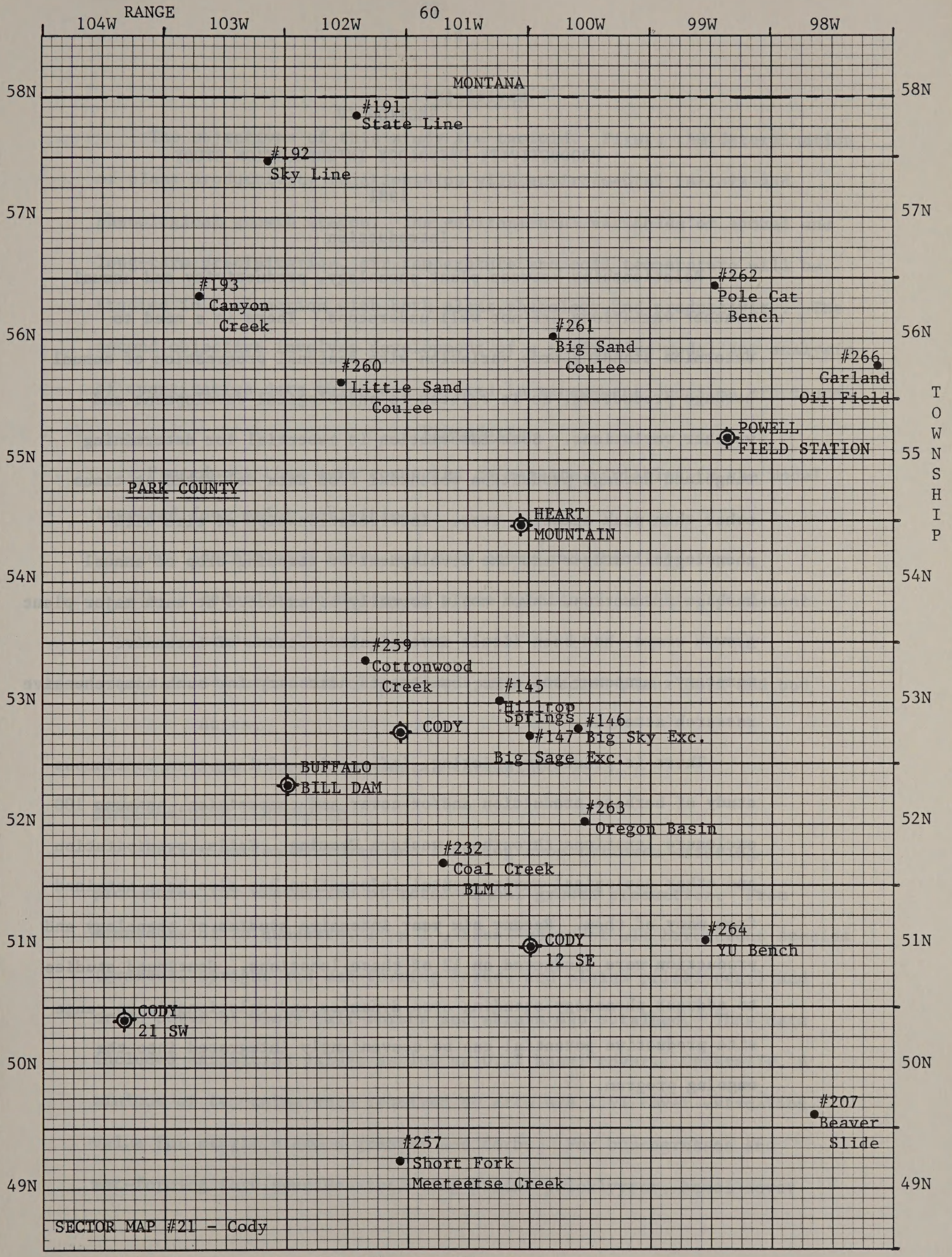

SECTOR MAP #21 - Cody

● Location of University of Wyoming and BLM rain gauges

⊕ Location of U.S. Weather Bureau Stations

SECTION IV

PRODUCTIVITY-PHENOLOGY INTERRELATION STUDY

1981

Introduction

Relationships between plant phenology, productivity and annual weather variations are not well understood. There is a need to determine standing crop variation with seasonal progression of annual herbage production, as it relates to phenological development and weather variations. Such information is essential for determining rangeland herbage production potential from data collected at times other than peak standing crop. Interrelationships of time with phenological stages and the development of standing crop of annual herbage production, which could normally be expected at each major plant growth stage, has been little investigated because of extensive monetary, manpower and time commitments necessary for such comprehensive research attempts.

There is presently existing, information of long-term continuous study of herbage production and/or cover and composition, on some 100 exclosure locations throughout western Wyoming. Soils, precipitation and other ecological-environmental information has also been obtained from many of them. Recent six year intensive studies of phenology and production were conducted on 12 of these locations. Continued studies to address phenology-standing crop dynamics and relationship to range site productive potential can be conveniently integrated into the ongoing program.

Objectives

The objectives of this study are twofold. First, the determination of plant productivity relationships with environmental factors and phenological growth stages. The environmental variables of annual and long-term precipitation, air temperature and soil temperature will be studied in conjunction with both plant phenology and productivity. The second objective involves development of a predictive model for analysis of quantitative data which can be used in management decision processes.

Procedures

Procedures that were conducted to measure variables in the model involved four major activities:

a. determining early and late cover and standing crop

b. recording phenology of prime species on existing permanent transect lines,

c. selection and clipping of prime species plant culm and bud units,

d. recording environmental variables.

Standing Crop Procedures

Determination of cover and standing crop followed existing procedures for estimation of total annual growth production. From transects of 20 quadrats, 1' x 1', basal cover of all herbaceous species (grasses, upright and mat-forming forbs, and plains pricklypear) and crown cover of woody half-shrubs and shrubs was obtained. This data included estimation values as low as 0.1% basal cover. Generally, a minimum of ten culms were required to attain a 1.0% cover estimation value for single stemmed grasses and forbs. For bunchgrasses and mat-forming forb species, including plains pricklypear, basal cover value estimates were simple expressions of the estimated proportional area of the quadrat occupied by any species. Guide frames of several different sizes representing different proportional amounts of a quadrat were utilized to assist the accuracy of estimation. Crown cover estimation of shrubs and low-growing half-shrubs were generally estimated to exclude significant dead or unoccupied areas within the crown perimeter.

Determination of standing crop involved clipping all grasses and grass-likes and upright forb species within each of the 1' x 1' (30 x 30 cm) quadrats at ground or crown level. Perennial grass and grass-like species of each transect were placed in individual bags. Annual grasses, annual forbs and perennial forbs were combined in bags identified only by group. Each bag was identified by exclosure name, date, transect location or treatment area and with quadrat number for subsequent correlation with corresponding basal cover estimates. All bags were oven dried at 70°C for 24 hours. Weighing was done on a Sartorius top loading balance and values rounded to the nearest 0.01 gram. The need for such a weight unit was derived from the fact that many specimens of clipped plants weighed only as much as two or three hundredths of a gram when dried. To have used a weight limit of 0.1 or 1.0 gram would have resulted in excessive inflation of very small samples. The numerical process of recording weights at hundredths of a gram thus should be recognized in this light and not that the data specifically express a concept of accuracy at that level.

Standing crop of shrubs was determined by using a double sampling weight estimate procedure with a 4' x 5' wire frame gridded to 6" x 6". Weight units were estimated at 20 random sampling plots. Weight units of large shrub species were estimated and all new green growth material, including new twig growth, was clipped or plucked from within a 6" x 6" quadrat section. Three weight units were clipped for each species. Weight units of mat-forming woody species such as Hood's phlox and Hooker sandwort were obtained from common size plant units, often 3"-5" in diameter, from which the annual growth was removed. Weight units of small upright shrubs and half-shrubs such as winterfat and granite gilia were obtained by removal of all annual growth from the entire plant. Each weight unit of plains pricklypear consisted of ten leaf pads, but unlike all other shrub species, the oven dried weight of the ten pads was considered to be ten times greater than the annual growth increment.

For determination of early season standing crop, clipping and estimation of weight units was conducted during late May and early June. For determination of greatest standing crop, herbaceous species clippings were conducted during August. Weight unit estimations were delayed until late September - early October to allow for complete seed maturation of sagebrushes and for natural early shedding of most leaves which had erupted during the previous fall season.

Phenology Transect Procedures

Monitoring phenodynamics of vegetation at each of twelve exclosure study locations was initiated in 1973. At that time phenology stages of plants were defined by written descriptive statements and combined numerical scoring values ranging from 0.0 through 17.0. A recent modification initiated in 1979, incorporated the early separation of vegetative from reproductive stages. Scoring values now range from 1 through 8 for vegetative categories and 9 through 18 for reproductive categories of plant growth. A complete description of phenological sampling procedures is presented in Volume I of this report.

For determination of average phenology of each of the four prime species (Agropyron smithii and A. spicatum; Artemisia nova and A. tridentata), transects were established and 20 random plants were identified for repetitive observation and expression of phenological development. Death of shrubs required replacement and loss of grass clone areas, especially western wheatgrass, required identification of replacements which were identified by new coordinates along the transect line. A general evaluation of the phenological state of all species was obtained by simple observation over the exclosure area.

Earliest seasonal recording of phenology occurred during late April - early May. During the spring-summer period of rapid growth, phenologic data were recorded at approximately 14 day intervals. During September and later, data were recorded at three to four week intervals and discontinued after October.

Specific activities for monitoring productivity required the determination of average phenology and corresponding numerical value for each of the prime species at an exclosure. The plants on each phenology transect line were observed and ranked according to vegetative and reproductive stage.

Productivity Clipping Procedures

Concurrent with early standing crop estimation, procedures for measuring productivity of the four prime species were initiated. Twenty individual plant units of each prime species were clipped. Clipped plants were selected to best represent the average phenology of a given prime species as indicated from the average phenology values on the transect lines. The specimens to be clipped were selected at locations near the corresponding phenology transect line. Twenty plants were clipped and individually bagged and identified with exclosure, species and date.

Productivity units of the wheatgrasses were individual culms. Selection was based primarily on the phenology average of the permanent transect lines. Productivity units of the sagebrushes were individual twigs of current annual growth and buds. Phenologic development, representative of the adjacent permanent phenology transect, defined the observer selection criteria.

The expression of standing crop at frequent intervals, derived from the productivity weight units integrated with early and late standing crop production provides a characterization of community productivity dynamics. In addition, the interrelation of prime species productivity units with phenologic progress provides a detailed description of phenodynamics and related standing crop values for these species.

Time-variable influence of environmental factors will influence both productivity and phenology. By interpretation of cause-effect responses, the biotic and environmental data will provide information useful for prediction of growth and phenodynamics.

Recording Environmental Variables

Maximum and minimum air temperatures since the previous sampling data were recorded from a max-min thermometer located in a shaded site at each study area. Current temperature was also recorded.

Soil moisture was determined from gravimetric samples at 0-6", 6"-12", and 18"-24". Samples were taken with a king tube and three sets of samples were taken adjacent to each phenology transect line. Soil samples are placed in air tight metal containers and weighed soon after collection with a triple beam balance. Upon return to the laboratory the container caps were removed, for oven drying at 70°C for 48 hours, prior to dry weight determination. Percent moisture was determined by the formula:

$$100.0 - \frac{\text{Net dry weight}}{\text{Net wet weight}} \text{ X } 100 = \text{percent moisture}$$

Soil temperature at 15" depth was obtained at each soil moisture sampling site with the use of a thermometer probe. Often a small rod must be driven into the soil to provide access for the thermometers probe.

Precipitation since the previous sampling date was obtained from metal cylindrical gauges of a diameter such that 1 inch of precipitation is equal to 100 ml.

1981 Results

Productivity clippings were obtained at two weeks intervals during the majority of the growth season beginning in late April and ending in latter September. Data were obtained ten times on most locations.

Productivity clippings weights, phenology, and related data are presented in Table 1. Changes in culm weights were positive through mid-June but at many locations, culm weight losses for grasses and for buds of sagebrushes, were closely linked with warm summer temperatures and reduced effective precipitation. Detailed analyses will be conducted in the future.

Table I. Average phenology and productivity clipping weights (gms) for 1981 for each of twenty weight units of the primary species for each sampling date.

Species	Page
Agripyron smithii (vegetative and reproductive).	69
Agropyron spicatum (vegetative and reproductive)	89
Artemisia nova negetative.	103
Artemisia nova reproductive.	106
Artemisia tridentata vegetative.	109
Artemisia tridentata reproductive.	121

```
   STUDY AREA BUD KIMBAL              AGROPYRON SMITHII                          1981 VEGETATIVE
              ----------           -----------------------


   DATE      PHENOLOGY                     PRODUCTIVITY CLIPPINGS                          MEAN   STD    GROWTH
               VEG  REPR                                                                          DEV    INCREMENT
*****************************************************************************************************************

  2  MAY       4.2   8.0     .035  .047  .031  .030  .030  .036  .049  .022  .041  .034
                             .044  .038  .024  .058  .061  .043  .100  .050  .050  .057   .044 .0172
                                                                                                          .015
 19  MAY       4.7   8.0     .068  .085  .040  .059  .057  .043  .058  .030  .056  .086
                             .078  .057  .078  .033  .071  .032  .049  .075  .039  .083   .059 .0186
                                                                                                          .039
  2 JUNE       5.1   9.0     .101  .185  .107  .091  .073  .109  .171  .103  .080  .115
                             .038  .051  .096  .111  .108  .154  .081  .072  .012  .094   .098 .0410
                                                                                                          .042
 17 JUNE       5.7  10.5     .104  .175  .150  .227  .125  .148  .209  .150  .128  .167
                             .125  .176  .123  .085  .118  .121  .080  .149  .104  .132   .112**.0377
                                                                                                         -.023
 29 JUNE       5.9 13.5      .124  .187  .110  .078  .056  .145  .085  .182  .132  .066
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .124* .0461
                                                                                                         -.055
 14 JULY       6.1 14.0      .038  .070  .076  .117  .062  .048* .061  .033  .049  .048
                             .047  .184* .038  .063  .060  .035  .060  .038  .098  .054   .065* .0277
                                                                                                          .026
 28 JULY       6.4 15.8      .084  .049  .099  .069  .110  .105  .086  .071  .072  .119
                             .061  .054  .093  .062  .105  .118  .104  .079  .076  .126   .087 .0229
                                                                                                         -.015
 11  AUG       6.6 16.0      .033  .027  .089  .046  .079  .113  .050  .120  .109  .056
                             .075  .074  .137  .137  .090  .044  .023  .075  .044  .018   .072 .0372
                                                                                                          .024
 25  AUG       6.6 16.9      .114  .029  .051  .178  .110  .112  .077  .104  .077  .081
                             .088  .083  .107  .091  .091  .098  .090  .130  .135  .075   .096 .0313
                                                                                                          .000
 12 SEPT       7.1 18.0      .080  .064  .083  .072  .086  .076  .092  .105  .069  .097
                             .086  .074  .076  .073  .081  .151  .125  .168  .163  .109   .096 .0315

 25 SEPT       7.6  18.0
                              0.0 = NOT RECORDED

                              MEASUREMENTS IN GRAMS

                              * = CORRECTION ADJUSTMENTS BY H G FISSER
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    STUDY AREA BUD KIMBAL                 AGROPYRON SMITHII                           1981 REPRODUCTIVE
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   DATE      PHENOLOGY                            PRODUCTIVITY CLIPPINGS                           MEAN  STD    GROWTH
              VEG  REPR                                                                                  DEV   INCREMENT
**************************************************************************************************************************

  29 JUNE     5.9  13.5    .318  .263  .233  .249  .325  .456  .418  .404  .314  .408
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .339 .0784

                           0.0 = NOT RECORDED

                           MEASUREMENTS IN GRAMS
   STUDY AREA CUMBER #3                 AGROPYRON SMITHII                                   1981 VEGETATIVE
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  DATE     PHENOLOGY                          PRODUCTIVITY CLIPPINGS                           MEAN  STD   GROWTH
            VEG  REPR                                                                                DEV   INCREMENT
*****************************************************************************************************************

  2  MAY     4.0  8.0      .034  .033  .063  .043  .026  .045  .040  .026  .050  .020
                           .055  .031  .023  .026  .044  .023  .030  .040  .040 0.000  .036 .0118
                                                                                                          .013
 26  MAY     4.2  8.0      .030  .078  .047  .057  .052  .046  .051  .044  .034  .033
                           .064  .088  .028  .033  .032  .038  .052  .089  .056  .046  .050 .0182
                                                                                                          .010
  5 JUNE     4.9  8.0      .075  .052  .066  .046  .061  .056  .088  .063  .053  .095
                           .066  .029  .057  .056  .041  .066  .064  .044  .061  .064  .060 .0151
                                                                                                          .019
 16 JUNE     5.1  9.3      .074  .060  .046  .069  .153  .109  .129  .084  .043  .052
                           .071  .056  .101  .047  .080  .055  .095  .108  .076  .068  .079 .0294
                                                                                                         -.013
 30 JUNE     5.6 10.0      .086  .040  .069  .093  .044  .096  .052  .048  .053  .067
                           .075  .075  .065  .051  .113  .047  .045  .058  .075  .055  .065 .0199
                                                                                                          .048
 14 JULY     6.0 14.0      .107  .120  .153  .112  .086  .064  .059  .051  .033  .095
                           .213  .160  .191  .159  .103 0.000 0.000 0.000 0.000 0.000  .114 .0526
                                                                                                         -.039
 28 JULY     6.2 14.5      .079  .109  .025  .060  .123  .070  .050  .122  .051  .056
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .074 .0333
                                                                                                         -.025
 11  AUG     6.8 16.0      .054  .052  .049  .033  .069  .068  .052  .036  .041  .069
                           .049  .098  .066  .055  .034  .029  .020  .052  .040  .029  .050 .0183
                                                                                                          .014
 25  AUG     6.9 16.4      .076  .080  .106  .037  .066  .087  .075  .060  .058  .059
                           .054  .067  .048  .105  .042  .040  .056  .049  .055  .061  .064 .0193
                                                                                                          .015
 13 SEPT     6.9 16.9      .034  .104  .105  .029  .048  .041  .051  .049  .082  .100
                           .095  .076  .079  .136  .107  .162  .083  .093  .050  .054  .079 .0350
 OCT 4       8.0 18.0
                           0.0 = NOT RECORDED

                           MEASUREMENTS IN GRAMS
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     STUDY AREA CUMBER #3               AGROPYRON SMITHII                          1981 REPRODUCTIVE
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       DATE     PHENOLOGY                          PRODUCTIVITY CLIPPINGS                          MEAN  STD   GROWTH
                  VEG  REPR                                                                              DEV   INCREMENT
****************************************************************************************************************************


      14 JULY     6.0 14.0      .328  .457  .118  .163  .302 0.000 0.000 0.000 0.000 0.000
                               0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .274 .1359
                                                                                                               .038
      28 JULY     6.2 14.5      .340  .525  .301  .212  .236  .219  .314  .281  .314  .370
                               0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .311 .0913

                                 0.0 = NOT RECORDED

                                 MEASUREMENTS IN GRAMS
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    STUDY AREA DEMER                      AGROPYRON SMITHII                          1981 VEGETATIVE
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   DATE     PHENOLOGY                     PRODUCTIVITY CLIPPINGS                     MEAN  STD   GROWTH
             VEG  REPR                                                                     DEV   INCREMENT
*******************************************************************************************************

    2  MAY    4.5  8.0    .055  .051  .031  .064  .067  .047  .079  .038  .082  .031
                          .088  .058  .048  .041  .034  .072  .055  .050  .044  .105   .057 .0201
                                                                                                  .032
   20  MAY    5.2  9.0    .066  .099  .087  .109  .122  .120  .094  .078  .075  .076
                          .069  .069  .078  .067  .080  .091  .082  .092  .101  .125   .089 .0186
                                                                                                  .013
    2 JUNE    5.6  9.5    .116  .113  .121  .134  .112  .104  .091  .083  .114  .101
                          .122  .085  .066  .107  .113  .113  .091  .098  .080  .072   .102 .0181
                                                                                                  .022
   17 JUNE    5.9 10.6    .099  .123  .080  .108  .131  .130  .120  .113  .120  .167
                          .075  .108  .058  .117  .234  .180  .117  .124  .125  .143   .124 .0381
                                                                                                  .007
   29 JUNE    6.0 13.5    .076  .075  .196  .154  .118  .099  .251  .150  .191  .171
                          .097  .131  .102  .068  .108  .197  .112  .095  .071  .142   .130 .0504
                                                                                                 -.025
   14 JULY    6.2 16.3    .142  .091  .073  .151  .116  .073  .090  .106  .097  .077
                          .088  .114  .131  .106  .107  .092  .114  .166  .109  .056   .105 .0275
                                                                                                 -.018
   28 JULY    6.5 16.5    .047  .118  .140  .074  .074  .055  .063  .049  .086  .165
                         0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .087 .0406
                                                                                                  .028
   11  AUG    6.5 16.7    .166  .092  .155  .101  .054  .147  .035  .156  .131 0.000
                         0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .115 .0474
                                                                                                 -.039
   25  AUG    6.6 16.7    .097  .040  .036  .035  .040  .044  .109  .063  .051  .108
                          .100  .056  .067  .095  .104  .122  .081  .121  .068  .091   .076 .0298
                                                                                                  .023
   12 SEPT    7.2 18.0    .105  .112  .110  .080  .076  .095  .109  .091  .121  .093
                         0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .099 .0146
  25 SEPT     7.5 18.0
                          0.0 = NOT RECORDED

                          MEASUREMENTS IN GRAMS
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        STUDY AREA DENER                      AGROPYRON SMITHII                        1981 REPRODUCTIVE
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      DATE    PHENOLOGY                       PRODUCTIVITY CLIPPINGS                      MEAN  STD   GROWTH
               VEG  REPR                                                                        DEV   INCREMENT
***************************************************************************************************************

    28 JULY     6.5 16.5     .257  .241  .283  .339  .258  .248  .247  .241  .372  .445
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .293 .0696
                                                                                                        .054
    11  AUG     6.5 16.7     .337  .257  .250  .171  .588  .367  .367  .572  .192  .370
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .347 .1425
                                                                                                       -.183
    12 SEPT     7.2 18.0     .130  .122  .175  .176  .178  .145  .155  .197  .193  .166
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .164 .0253

                              0.0 = NOT RECORDED

                              MEASUREMENTS IN GRAMS
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     STUDY AREA FARSON                      AGROPYRON SMITHII                             1981 VEGETATIVE
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   DATE      PHENOLOGY                            PRODUCTIVITY CLIPPINGS                          MEAN  STD   GROWTH
               VEG  REPR                                                                                DEV   INCREMENT
*****************************************************************************************************************************

  2  MAY      4.2  8.0       .047  .023  .035  .028  .016  .020  .066  .052  .018  .034
                             .070  .025  .047  .052  .018  .046  .066  .037  .028  .046   .039 .0170
                                                                                                          .003
 26  MAY      4.5  9.0       .063  .046  .033  .055  .036  .030  .020  .034  .061  .026
                             .030  .048  .064  .042  .056  .031  .041  .053  .044  .025   .042 .0135
                                                                                                          .037
  5 JUNE      4.9  9.7       .117  .065  .054  .053  .071  .081  .052  .074  .064  .067
                             .080  .089  .039  .058  .086  .146  .094  .089  .096  .112   .079 .0257
                                                                                                          .011
 16 JUNE      5.0 10.5       .087  .068  .097  .044  .050  .128  .089  .085  .112  .096
                             .082  .057  .094  .110  .157  .114  .096  .089  .097  .048   .090 .0278
                                                                                                          .002
 30 JUNE      5.3 11.4       .112  .052  .072  .089  .079  .093  .123  .069  .105  .117
                             .094  .096  .098  .109  .114  .124  .074  .066  .058  .103   .092 .0218
                                                                                                         -.009
 14 JULY      6.0 13.0       .059  .075  .085  .117  .057  .090  .120  .073  .070  .085
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .083 .0215
                                                                                                          .013
 28 JULY      6.1 14.8       .151  .140  .097  .058  .061  .065  .114  .094  .065  .115
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .096 .0337
                                                                                                         -.026
 11  AUG      6.6 16.9       .056  .052  .064  .092  .082  .068  .082  .055  .079  .070
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .070 .0135
                                                                                                          .011
 25  AUG      6.6 18.0       .055  .082  .072  .078  .115  .096  .050  .085  .051  .122
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .081 .0252
                                                                                                         -.009
 12 SEPT      6.8 18.0       .061  .057  .075  .060  .074  .045  .044  .071  .078  .046
                             .052  .057  .094  .054  .035  .049  .058  .135  .152  .143   .072 .0338
  4 OCT       8.0 18.0
                              0.0 = NOT RECORDED

                              MEASUREMENTS IN GRAMS
     STUDY AREA FARSON                    AGROPYRON SMITHII                           1981 REPRODUCTIVE
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   DATE      PHENOLOGY                        PRODUCTIVITY CLIPPINGS                          MEAN  STD   GROWTH
              VEG  REPR                                                                             DEV   INCREMENT
*************************************************************************************************************************

 14 JULY      6.0 13.0      .202  .241  .360  .284  .217  .279  .222  .340  .225  .186
                           0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .256 .0586
                                                                                                         -.058
 28 JULY      6.1 14.8      .544  .225  .160  .133  .144  .129  .185  .227  .075  .154
                           0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .198 .1299
                                                                                                          .016
 11  AUG      6.6 16.9      .256  .234  .228  .211  .265  .187  .169  .232  .241  .110
                           0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .213 .0467
                                                                                                         -.028
 25  AUG      6.6 18.0      .170  .281  .121  .197  .168  .198  .212  .146  .148  .208
                           0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .185 .0451

                             0.0 = NOT RECORDED

                             MEASUREMENTS IN GRAMS
   STUDY AREA HORSE CK.                 AGROPYRON SMITHII                              1981 VEGETATIVE
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 DATE       PHENOLOGY                      PRODUCTIVITY CLIPPINGS                          MEAN  STD    GROWTH
             VEG  REPR                                                                           DEV    INCREMENT
******************************************************************************************************************

  2  MAY     4.4  8.0     .063  .075  .058  .036  .049  .081  .057  .067  .066  .049
                          .064  .073  .069  .054  .078  .066  .055  .046  .059  .078   .062 .0119
                                                                                                     .012
 19  MAY     5.0  9.0     .084  .057  .099  .080  .062  .070  .078  .080  .073  .088
                          .065  .115  .055  .066  .060  .076  .074  .051  .076  .082   .075 .0153
                                                                                                     .045
  3 JUNE     5.3 10.3     .135  .131  .128  .153  .091  .135  .153  .122  .069  .133
                          .143  .063  .113  .169  .099  .144  .087  .069  .132  .112   .119 .0304
                                                                                                     .105
 16 JUNE     5.7 10.3     .224  .294  .236  .250  .225  .144  .268  .153  .176  .275
                         0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .225 .0516
                                                                                                     .067
 29 JUNE     6.0 11.1     .268  .426  .549  .136  .180  .369  .228  .258  .236  .262
                         0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .291 .1232
                                                                                                    -.129
 14 JULY     6.3 13.5     .105  .071  .249  .143  .112  .088  .206  .114  .279  .258
                         0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .163 .0779
                                                                                                     .018
 28 JULY     6.4 15.9     .196  .276  .195  .111  .160  .173  .167  .227  .134  .161
                         0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .180 .0469
                                                                                                    -.026
 11  AUG     6.5 16.2     .147  .160  .139  .157  .102  .202  .110  .247  .142  .138
                         0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .154 .0426
                                                                                                    -.077
 25  AUG     6.5 16.6     .089  .084  .084  .066  .062  .092  .094  .074  .067  .066
                         0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .078 .0121
                                                                                                     .053
 12 SEPT     6.9 18.0     .126  .132  .135  .099  .131  .119  .107  .135  .160  .161
                         0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .131 .0198
 25 SEPT     8.0 18.0
                           0.0 = NOT RECORDED

                           MEASUREMENTS IN GRAMS
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     STUDY AREA HORSE CK.                  AGROPYRON SMITHII                          1981 REPRODUCTIVE
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   DATE       PHENOLOGY                          PRODUCTIVITY CLIPPINGS                             MEAN  STD    GROWTH
               VEG  REPR                                                                                  DEV   INCREMENT
*************************************************************************************************************************

  16 JUNE      5.7 10.3      .650  .440  .416  .296  .503  .371  .432  .351  .531  .516
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000    .451 .1028
                                                                                                          -.056
  29 JUNE      6.0 11.1      .375  .472  .380  .474  .464  .352  .473  .276  .393  .287
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000    .395 .0755
                                                                                                          -.036
  14 JULY      6.3 13.5      .409  .527  .278  .298  .484  .273  .219  .236  .340  .523
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000    .359 .1183
                                                                                                           .017
  28 JULY      6.4 15.9      .299  .550  .258  .339  .271  .323  .496  .375  .522  .327
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000    .376 .1072
                                                                                                          -.068
  11  AUG      6.5 16.2      .424  .433  .290  .308  .366  .265  .253  .260  .256  .230
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000    .309 .0736
                                                                                                          -.167
  25  AUG      6.5 16.6      .115  .126  .116  .143  .120  .095  .087  .110  .122  .384
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000    .142 .0865
                                                                                                           .078
  12 SEPT      6.9 18.0      .145  .157  .186  .226  .237  .252  .263  .199  .232  .299
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000    .220 .0480

                              0.0 = NOT RECORDED

                              MEASUREMENTS IN GRAMS
   STUDY AREA MESA ANT.                 AGROPYRON SMITHII                           1981 VEGETATIVE
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  DATE     PHENOLOGY                    PRODUCTIVITY CLIPPINGS                          MEAN  STD    GROWTH
             VEG  REPR                                                                       DEV   INCREMENT
*****************************************************************************************************************

   2  MAY     3.5   8.0     .019  .024  .025  .024  .023  .021  .040  .016  .031  .009
                            .037  .027  .025  .026  .016  .024  .015  .021  .039  .026   .024 .0079
                                                                                                    .013
  26  MAY     4.4   8.0     .049  .040  .038  .031  .050  .024  .032  .031  .037  .035
                            .039  .050  .036  .025  .079  .029  .029  .021  .045  .030   .037 .0129
                                                                                                   -.002
   5 JUNE     4.8   9.0     .051  .024  .026  .028  .059  .012  .013  .034  .034  .048
                            .033  .043  .054  .021  .030  .033  .037  .046  .037  .037   .035 .0127
                                                                                                    .017
  16 JUNE     4.9 10.1      .038  .040  .070  .048  .064  .045  .040  .049  .049  .041
                            .046  .042  .051  .036  .068  .061  .059  .053  .052  .081   .052 .0121
                                                                                                    .005
  30 JUNE     5.7 10.5      .048  .043  .068  .075  .075  .037  .047  .047  .047  .061
                            .059  .065  .059  .036  .094  .075  .036  .044  .042  .080   .057 .0168
                                                                                                    .030
  14 JULY     6.0 15.5      .086  .082  .028  .099  .123  .069  .056  .067  .010  .127
                            .060  .122  .225  .106  .102  .191  .023  .057  .033  .079   .087 .0536
                                                                                                   -.021
  28 JULY     6.3 16.5      .045  .030  .047  .040  .142  .057  .056  .059  .115  .029
                            .046  .091  .040  .127 0.000 0.000 0.000 0.000 0.000 0.000   .066 .0372
                                                                                                   -.038
  11  AUG     6.5 16.5      .026  .023  .015  .031  .038  .034  .029  .021  .028  .048
                            .031  .024  .049  .020  .009  .024  .033  .024  .032  .024   .028 .0097
                                                                                                    .015
  24  AUG     6.7 16.9      .029  .023  .025  .070  .029  .029  .039  .065  .031  .038
                            .034  .035  .053  .052  .040  .070  .056  .033  .088  .017   .043 .0188
                                                                                                   -.000
  12 SEPT     6.9   0.0     .033  .034  .056  .035  .056  .044  .034  .039  .032  .054
                            .033  .037  .050  .041  .066  .021  .027  .055  .066  .037   .043 .0127
  4 OCT       8.0  18.0
                             0.0 = NOT RECORDED

                             MEASUREMENTS IN GRAMS
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     STUDY AREA OWL DRAW                    AGROPYRON SMITHII                              1981 VEGETATIVE
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   DATE      PHENOLOGY                        PRODUCTIVITY CLIPPINGS                           MEAN  STD    GROWTH
              VEG  REPR                                                                              DEV   INCREMENT
******************************************************************************************************************
   15 APRIL     3.3  8.0
  25  MAY       4.4 10.2       .085  .084  .087  .060  .083  .081  .073  .099  .064  .064
                               .085  .072  .094  .065  .085  .083  .087  .048  .068  .082   .077 .0127
                                                                                                           .030
   8 JUNE       5.2 10.9       .108  .096  .113  .185  .103  .075  .111  .034  .109  .114
                               .128  .098  .102  .104  .091  .075  .129  .109  .119  .139   .107 .0292
                                                                                                           .043
  15 JUNE       5.5 12.0       .126  .107  .206  .224  .095  .170  .132  .118  .204  .120
                              0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .150 .0467
                                                                                                           .009
  28 JUNE       5.9 15.0       .280  .222  .131  .086  .138  .101  .122  .168  .119  .228
                              0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .160 .0635
                                                                                                          -.059
  13 JULY       6.0 16.4       .070  .079  .067  .074  .089  .075  .047  .070  .087  .070
                               .108  .177  .176  .112  .121  .099  .143  .129  .122  .090   .100 .0357
                                                                                                          -.029
  27 JULY       6.0 16.5       .054  .068  .041  .054  .088  .055  .112  .083  .067  .080
                               .054  .073  .120  .075  .054  .113  .082  .060  .047  .054   .072 .0227
                                                                                                           .016
  10  AUG       6.3 16.6       .100  .072  .049  .053  .085  .099  .106  .058  .128  .128
                              0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .088 .0292
                                                                                                          -.008
  24  AUG       6.4 18.0       .066  .080  .032  .058  .063  .065  .088  .073  .089  .076
                               .068  .043  .061  .035  .023  .146  .131  .163  .119  .120   .080 .0383
                                                                                                           .004
  11 SEPT       6.8 18.0       .052  .084  .071  .068  .103  .117  .074  .058  .069  .098
                               .063  .177  .046  .092  .046  .055  .099  .123  .089  .095   .084 .0315
  25 SEPT       8.0 18.0
                               0.0 = NOT RECORDED

                               MEASUREMENTS IN GRAMS
     STUDY AREA OWL DRAW                       AGROPYRON SMITHII                           1981 REPRODUCTIVE
                ----------                    ------------------------

    DATE      PHENOLOGY                        PRODUCTIVITY CLIPPINGS                             MEAN  STD   GROWTH
               VEG  REPR                                                                                DEV   INCREMENT
**********************************************************************************************************************

  15 JUNE      5.5 12.0      .186  .210  .098  .147  .121  .095  .113  .192  .237  .403
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .180 .0925
                                                                                                           .042
  28 JUNE      5.9 15.0      .168  .189  .205  .247  .253  .367  .164  .287  .195  .146
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .222 .0675
                                                                                                          -.017
  10  AUG      6.3 16.6      .133  .141  .106  .179  .239  .213  .253  .197  .325  .265
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .205 .0678

                              0.0 = NOT RECORDED

                              MEASUREMENTS IN GRAMS
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   STUDY AREA RED WASH 2                    AGROPYRON SMITHII                          1981 VEGETATIVE
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  DATE      PHENOLOGY                           PRODUCTIVITY CLIPPINGS                          MEAN  STD    GROWTH
              VEG  REPR                                                                               DEV   INCREMENT
*********************************************************************************************************************

  1  MAY      3.9   8.0     .033  .020  .030  .026  .028  .052  .031  .024  .033  .032
                            .029  .021  .016  .021  .021  .030  .026  .030  .013  .019  .027 .0083
                                                                                                            .006
  4 JUNE      4.0   8.0     .019  .041  .034  .038  .025  .042  .022  .029  .052  .042
                            .032  .031  .048  .023  .023  .028  .033  .045  .020  .038  .033 .0097
                                                                                                            .025
 15 JUNE      4.6   9.0     .101  .032  .064  .058  .063  .039  .074  .051  .089  .041
                            .046  .063  .048  .034  .061  .070  .050  .026  .089  .063  .058 .0200
                                                                                                            .006
 29 JUNE      5.2  10.0     .077  .065  .082  .075  .067  .023  .086  .055  .056  .057
                           0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .064 .0182
                                                                                                            .028
 13 JULY      6.1  14.0     .112  .127  .087  .061  .060  .119  .075  .052  .100  .128
                           0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .092 .0291
                                                                                                           -.023
 27 JULY      6.1  14.5     .076  .053  .044  .078  .100  .033  .068  .066  .095  .081
                           0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .069 .0213
                                                                                                           -.001
 10  AUG      6.4  16.9     .071  .082  .066  .038  .031  .035  .037  .048  .075  .044
                            .052  .058  .046  .104  .068  .054  .130  .137  .058  .126  .068 .0324
                                                                                                            .012
 25  AUG      6.4  16.9     .066  .099  .076  .095  .117  .066  .119  .082  .036  .040
                           0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .080 .0287
                                                                                                            .000
 13 SEPT      6.7  16.9     .124  .070  .049  .077  .046  .110  .044  .061  .054  .092
                            .096  .110  .037  .167  .065  .143  .067  .069  .057  .057  .080 .0353
  3 OCT       6.9  18.0
                             0.0 = NOT RECORDED

                             MEASUREMENTS IN GRAMS
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     STUDY AREA RED WASH 2              AGROPYRON SMITHII                         1981 REPRODUCTIVE
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   DATE      PHENOLOGY                           PRODUCTIVITY CLIPPINGS                          MEAN  STD    GROWTH
              VEG  REPR                                                                                DEV   INCREMENT
**************************************************************************************************************************

  29 JUNE      5.2 10.0     .149  .141  .102  .121  .165  .118  .146  .135  .092  .077
                           0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .125 .0278
                                                                                                          .038
  13 JULY      6.1 14.0     .133  .101  .247  .107  .107  .102  .212  .114  .271  .230
                           0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .162 .0689
                                                                                                          .025
  27 JULY      6.1 14.5     .152  .278  .156  .179  .147  .177  .180  .206  .197  .205
                           0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .188 .0381
                                                                                                         -.021
  25  AUG      6.4 16.9     .132  .164  .144  .169  .216  .119  .225  .258  .088  .152
                           0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .167 .0523

                             0.0 = NOT RECORDED

                             MEASUREMENTS IN GRAMS
     STUDY AREA SHOSHONI 7                 AGROPYRON SMITHII                          1981 VEGETATIVE
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    DATE      PHENOLOGY                        PRODUCTIVITY CLIPPINGS                             MEAN  STD    GROWTH
               VEG  REPR                                                                                DEV    INCREMENT
*****************************************************************************************************************************

   1  MAY      3.9   8.0     .027  .072  .025  .054  .053  .052  .034  .037  .019  .044
                             .030  .039  .038  .045  .028  .039  .025  .027  .020  .041   .037 .0133
                                                                                                             .056
  20  MAY      4.8   8.0     .084  .104  .051  .069  .081  .095  .082  .092  .118  .157
                             .125  .070  .145  .066  .055  .062  .069  .132  .122  .081   .093 .0308
                                                                                                            -.002
   3 JUNE      5.2   8.0     .062  .042  .128  .066  .059  .069  .101  .047  .189  .064
                             .076  .088  .046  .102  .102  .182  .114  .086  .095  .094   .091 .0400
                                                                                                             .021
  18 JUNE      5.9   9.0     .072  .159  .095  .102  .147  .096  .087  .144  .135  .075
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .111 .0320
                                                                                                            -.019
  30 JUNE      6.0  12.0     .127  .151  .076  .118  .055  .059  .079  .089  .078  .103
                             .133  .101  .068  .045  .100 0.000 0.000 0.000 0.000 0.000   .092 .0307
                                                                                                             .011
  13 JULY      6.3  15.0     .046  .070  .091  .076  .104  .067  .122  .045  .068  .096
                             .072  .121  .061  .070  .097  .141  .197  .220  .151  .142   .103 .0478
                                                                                                             .014
  27 JULY      6.3  16.9     .083  .059  .112  .085  .076  .073  .069  .074  .134  .061
                             .121  .087  .108  .136  .126  .215  .211  .134  .154  .223   .117 .0511
                                                                                                            -.037
  10  AUG      6.3  16.9     .073  .026  .035  .093  .073  .091  .057  .062  .054  .060
                             .079  .074  .087  .075  .032  .137  .098  .114  .128  .161   .080 .0350
                                                                                                             .017
  24  AUG      6.5  16.9     .102  .122  .130  .116  .066  .127  .067  .101  .093  .087
                             .057  .074  .098  .117  .111 0.000 0.000 0.000 0.000 0.000   .098 .0235
                                                                                                             .006
  11 SEPT      7.2  18.0     .062  .125  .136  .109  .122  .160  .157  .078  .087  .136
                             .088  .092  .060  .076  .068 0.000 0.000 0.000 0.000 0.000   .104 .0337
  25 SEPT      7.7  18.0
                              0.0 = NOT RECORDED

                              MEASUREMENTS IN GRAMS
     STUDY AREA SHOSHONI 7               AGROPYRON SMITHII                               1981 REPRODUCTIVE
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   DATE      PHENOLOGY                            PRODUCTIVITY CLIPPINGS                              MEAN  STD    GROWTH
               VEG  REPR                                                                                     DEV    INCREMENT
*************************************************************************************************************************

  18 JUNE       5.9  9.0      .161  .205  .163  .243  .162  .205  .311  .251  .189  .213
                             0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .210 .0476
                                                                                                            .477
  30 JUNE       6.0 12.0      .745  .850  .726  .832  .285 0.000 0.000 0.000 0.000 0.000
                             0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .688 .2313
                                                                                                           -.501
  24  AUG       6.5 16.9      .165  .180  .225  .167  .196 0.000 0.000 0.000 0.000 0.000
                             0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .187 .0248
                                                                                                            .010
  11 SEPT       6.5 16.9      .189  .251  .166  .215  .160 0.000 0.000 0.000 0.000 0.000
                             0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .196 .0375

                               0.0 = NOT RECORDED

                               MEASUREMENTS IN GRAMS
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STUDY AREA SWEETWATER　　AGROPYRON SMITHII　　1981 VEGETATIVE

DATE	PHENOLOGY		PRODUCTIVITY CLIPPINGS										MEAN	STD DEV	GROWTH INCREMENT
	VEG	REPR													
21 MAY	4.6	8.0	.070	.105	.071	.069	.046	.106	.070	.070	.052	.085			
			.058	.128	.069	.038	.099	.049	.073	.063	.055	.083	.073	.0226	
															.002
25 MAY	4.8	9.0	.082	.067	.071	.056	.036	.051	.111	.099	.077	.041			
			.081	.087	.060	.057	.051	.076	.135	.102	.109	.044	.075	.0265	
															.012
9 JUNE	5.4	9.0	.096	.041	.065	.097	.086	.072	.110	.052	.091	.103			
			.080	.070	.093	.072	.070	.125	.171	.076	.097	.056	.086	.0286	
															.020
17 JUNE	5.6	10.0	.077	.081	.154	.108	.080	.072	.071	.133	.088	.151			
			.160	.123	.114	.123	.151	.079	.068	.094	.097	.106	.107	.0307	
															-.024
1 JULY	6.0	13.0	.085	.042	.128	.088	.146	.043	.051	.080	.059	.067			
			.055	.089	.054	.068	.101	.110	.116	.059	.148	.069	.083	.0326	
															.009
15 JULY	6.2	14.5	.046	.074	.034	.057	.157	.068	.051	.084	.082	.113			
			.096	.084	.103	.078	.131	.162	.085	.087	.098	.158	.092	.0366	
															.058
29 JULY	6.2	15.0	.113	.262	.207	.230	.328	.287	.067	.128	.101	.144			
			.111	.147	.113	.144	.069	.147	.039	.143	.136	.092	.150	.0758	
															-.106
12 AUG	6.3	16.5	.047	.025	.048	.056	.028	.055	.042	.081	.026	.075			
			.059	.037	.041	.027	.022	.026	.039	.036	.071	.052	.045	.0175	
															.030
24 AUG	6.7	16.9	.082	.105	.078	.098	.084	.084	.079	.049	.090	.120			
			.031	.050	.057	.063	.083	.070	.102	.074	.060	.034	.075	.0233	
															.027
12 SEPT	6.7	16.9	.094	.048	.062	.054	.102	.095	.074	.106	.073	.073			
			.084	.077	.083	.081	.117	.135	.162	.165	.205	.137	.101	.0410	
4 OCT	7.2	18.0													

0.0 = NOT RECORDED

MEASUREMENTS IN GRAMS

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     STUDY AREA UPPER GOV.                     AGROPYRON SMITHII                             1981 VEGETATIVE
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  DATE      PHENOLOGY                           PRODUCTIVITY CLIPPINGS                           MEAN  STD   GROWTH
              VEG  REPR                                                                                DEV   INCREMENT
**************************************************************************************************************

   1  MAY      4.4   8.0     .031  .045  .043  .026  .019  .024  .036  .024  .033  .047
                             .034  .018  .062  .038  .045  .047  .038  .023  .036  .024   .035 .0114
                                                                                                       .016
  25  MAY      4.6   9.0     .043  .069  .045  .057  .093  .045  .034  .053  .097  .029
                             .035  .037  .055  .037  .061  .059  .033  .035  .056  .040   .051 .0188
                                                                                                       .021
   9 JUNE      5.3   9.8     .050  .075  .118  .093  .064  .084  .070  .081  .074  .060
                             .041  .070  .048  .093  .051  .098  .057  .092  .076  .046   .072 .0204
                                                                                                       .001
  17 JUNE      5.5  10.1     .085  .082  .085  .050  .064  .048  .093  .079  .082  .077
                             .074  .095  .065  .104  .053  .059  .082  .082  .053  .053   .073 .0165
                                                                                                       .011
  30 JUNE      6.0  12.5     .070  .054  .141  .099  .121  .123  .079  .167  .071  .045
                             .068  .051  .058  .057  .062  .095  .120  .068  .069  .063   .084 .0337
                                                                                                       .029
  13 JULY      6.2  14.6     .038  .049  .090  .045  .065  .034  .076  .072  .090  .077
                             .184  .139  .113  .341  .225  .106  .105  .122  .100  .183   .113 .0739
                                                                                                      -.025
  31 JULY      6.6  15.5     .081  .083  .074  .068  .061  .059  .063  .044  .069  .078
                             .111  .119  .080  .116  .098  .086  .083  .188  .096  .088   .087 .0306
                                                                                                      -.024
  10  AUG      6.8  15.8     .027  .049  .058  .089  .061  .078  .039  .116  .075  .043
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .064 .0266
                                                                                                       .006
  24  AUG      6.8  16.5     .057  .088  .067  .082  .045  .057  .056  .066  .057  .078
                             .090  .076  .058  .067  .096 0.000 0.000 0.000 0.000 0.000   .069 .0150
                                                                                                      -.002
  11 SEPT      7.0  18.0     .067  .072  .085  .076  .084  .064  .048  .083  .026  .067
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .067 .0183

  25 SEPT      7.8  18.0
                               0.0 = NOT RECORDED

                               MEASUREMENTS IN GRAMS
     STUDY AREA UPPER GOV.                 AGROPYRON SMITHII                                 1981 REPRODUCTIVE
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   DATE      PHENOLOGY                             PRODUCTIVITY CLIPPINGS                        MEAN  STD   GROWTH
               VEG  REPR                                                                              DEV   INCREMENT
*******************************************************************************************************************

  10  AUG      6.8 15.8      .125  .166  .128  .155  .300  .240  .389  .169  .217  .195
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .208 .0829
                                                                                                       -.056
  24  AUG      6.8 16.5      .127  .146  .152  .145  .193 0.000 0.000 0.000 0.000 0.000
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .153 .0244
                                                                                                       -.042
  11 SEPT      7.0 18.0      .110  .122  .171  .095  .114  .096  .102  .107  .092  .093
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .110 .0235

                              0.0 = NOT RECORDED

                              MEASUREMENTS IN GRAMS
     STUDY AREA BUD KIMBAL                      AGROPYRON SPICATUM                                   1981 VEGETATIVE
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   DATE      PHENOLOGY                               PRODUCTIVITY CLIPPINGS                                 MEAN  STD   GROWTH
              VEG  REPR                                                                                        DEV   INCREMENT
********************************************************************************************************************************
  15  APR     2.9  8.0
   2  MAY     4.4  8.0
  19  MAY     5.0  9.0     .086  .080  .068  .045  .057  .064  .056  .066  .034  .044
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .060 .0162
                                                                                                          .005
   2 JUNE     5.3  9.5     .070  .062  .047  .087  .049  .059  .040  .062  .085  .085
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .065 .0169
                                                                                                          .058
  17 JUNE     6.0 11.1     .085  .114  .120  .125  .114  .088  .137  .131  .138  .172
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .122 .0252
                                                                                                          .005
  29 JUNE     6.0 16.1     .139  .145  .108  .131  .103  .161  .118  .112  .095  .160
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .127 .0236
                                                                                                         -.018
  14 JULY     6.4 16.2     .083  .124  .154  .050  .090  .077  .158  .082  .157  .116
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .109 .0384
                                                                                                          .054
  28 JULY     6.4 16.3     .124  .093  .079  .122  .213  .202  .306  .255  .160  .079
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .163 .0783
                                                                                                         -.055
  11  AUG     6.4 16.4     .104  .128  .092  .098  .059  .115  .117  .179  .112  .077
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .108 .0322
                                                                                                         -.029
  25  AUG     6.7 16.9     .033  .096  .101  .101  .106  .081  .089  .054  .074  .058
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .079 .0243
                                                                                                          .001
  12 SEPT     7.0 18.0     .064  .099  .085  .066  .080  .089  .047  .093  .089  .088
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .080 .0161
  25 SEPT     7.6 18.0
                            0.0 = NOT RECORDED

                            MEASUREMENTS IN GRAMS
     STUDY AREA BUD KIMBAL                 AGROPYRON SPICATUM                           1981 REPRODUCTIVE
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    DATE     PHENOLOGY                             PRODUCTIVITY CLIPPINGS                           MEAN  STD   GROWTH
              VEG  REPR                                                                                   DEV   INCREMENT
*******************************************************************************************************************************

  19  MAY     5.0  9.0     .095  .120  .166  .092  .127  .176  .131  .091  .086  .101
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .119 .0319
                                                                                                         .019
   2 JUNE     5.3  9.5     .129  .259  .113  .112  .103  .118  .129 0.000 0.000 0.000
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .138 .0544
                                                                                                         .071
  17 JUNE     6.0 11.1     .174  .113  .230  .103  .188  .227  .296  .336  .325  .094
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .209 .0902
                                                                                                         .055
  29 JUNE     6.0 16.1     .193  .160  .167  .266  .334  .289  .283  .348  .262  .335
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .264 .0693
                                                                                                        -.084
  14 JULY     6.4 16.2     .100  .237  .126  .164  .186  .307  .181  .143  .163  .187
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .179 .0584
                                                                                                         .002
  28 JULY     6.4 16.3     .152  .225  .107  .199  .158  .103  .197  .194  .217  .266
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .182 .0518
                                                                                                        -.007
  11  AUG     6.4 16.4     .176  .181  .151  .173  .194 0.000 0.000 0.000 0.000 0.000
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .175 .0156
                                                                                                        -.032
  25  AUG     6.7 16.9     .147  .133  .166  .115  .132  .123  .149  .180  .150  .138
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .143 .0195
                                                                                                        -.010
  12 SEPT     7.0 18.0     .101  .107  .103  .185  .132  .163  .138  .126  .125  .155
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .134 .0275

                            0.0 = NOT RECORDED

                            MEASUREMENTS IN GRAMS
     STUDY AREA CEDAR MTN.                  AGROPYRON SPICATUM                               1981 VEGETATIVE
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    DATE     PHENOLOGY                      PRODUCTIVITY CLIPPINGS                             MEAN  STD   GROWTH
                VEG  REPR                                                                            DEV   INCREMENT
*******************************************************************************************************************

   1  MAY     4.7  9.3    .025  .026  .015  .019  .045  .022  .024  .020  .027  .036
                          .046  .030  .022  .012  .015  .019  .024  .016  .026  .060   .026 .0120
                                                                                                        .024
  27  MAY     4.9  9.5    .089  .045  .060  .056  .041  .031  .029  .040  .029  .061
                          .066  .052  .038  .068  .051  .051  .065  .052  .036  .044   .050 .0152
                                                                                                       -.007
   4 JUNE     5.2  9.6    .039  .027  .039  .027  .039  .029  .078  .055  .060  .024
                          .055  .082  .042  .025  .038  .059  .021  .035  .032  .055   .043 .0176
                                                                                                        .023
  15 JUNE     5.3 10.1    .063  .054  .069  .045  .062  .082  .063  .067  .094  .074
                          .069  .047  .054  .077  .054  .043  .073  .091 0.000 0.000   .066 .0148
                                                                                                        .004
  29 JUNE     5.5  10.6   .040  .060  .112  .050  .058  .079  .073  .059  .081  .085
                         0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .070 .0207
                                                                                                       -.014
  13 JULY     6.0 14.3    .083  .061  .050  .069  .044  .065  .031  .060  .052  .046
                         0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .056 .0147
                                                                                                        .119
  27 JULY     6.4 15.5    .075  .119  .193  .149  .127  .151  .369  .199  .192  .177
                         0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .175 .0785
                                                                                                       -.117
  10  AUG     6.5 16.5    .050  .068  .063  .061  .052  .036  .058  .067  .068  .056
                         0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .058 .0100
                                                                                                        .018
  25  AUG     6.9 16.9    .076  .057  .035  .056  .089  .085  .037  .092  .088  .141
                         0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .076 .0313
                                                                                                       -.013
  13 SEPT     6.9 16.9    .051  .027  .047  .095  .093  .052  .047  .078  .090  .051
                         0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .063 .0238
   3 OCT      8.0 18.0
                           0.0 = NOT RECORDED

                           MEASUREMENTS IN GRAMS
     STUDY AREA CEDAR MTN.                      AGROPYRON SPICATUM                              1981 REPRODUCTIVE
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        DATE      PHENOLOGY                               PRODUCTIVITY CLIPPINGS                                 MEAN  STD   GROWTH
                   VEG  REPR                                                                                         DEV   INCREMENT
*************************************************************************************************************************************


      15 JUNE      5.3  10.1      .230  .144 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000
                                0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .187 .0608
                                                                                                                  .019
      29 JUNE      5.5  10.6      .221  .186  .154  .153  .418  .212  .144  .220  .252  .100
                                0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .206 .0872
                                                                                                                 -.008
      13 JULY      6.0  14.3      .268  .141  .167  .195  .234  .230  .146  .198  .221  .178
                                0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .198 .0409
                                                                                                                 -.113
      27 JULY      6.4  15.5      .200  .068  .066  .073  .100  .106  .054  .050  .072  .061
                                0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .085 .0442
                                                                                                                 -.070
      10  AUG      6.5  16.5      .025  .011  .013  .010  .011  .009  .020  .014  .011  .022
                                0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .015 .0056
                                                                                                                  .140
      28  AUG      6.9  16.9      .186  .224  .148  .177  .255  .166  .111  .095  .095  .085
                                0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .154 .0581
                                                                                                                  .003
      13 SEPT      6.9  16.9      .085  .208  .219  .189  .167  .151  .151  .130  .130  .141
                                0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .157 .0402

                                  0.0 = NOT RECORDED

                                  MEASUREMENTS IN GRAMS
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   STUDY AREA CUMBER.#3                    AGROPYRON SPICATUM                           1981 VEGETATIVE
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  DATE     PHENOLOGY                       PRODUCTIVITY CLIPPINGS                         MEAN  STD    GROWTH
             VEG  REPR                                                                          DEV    INCREMENT
**************************************************************************************************************

  2  MAY     4.5  9.3    .026  .023  .045  .039  .043  .025  .029  .027  .022  .025
                         .021  .028  .060  .062  .051  .029  .034  .039  .068  .018   .036 .0148
                                                                                                         .005
 26  MAY     4.6  9.6    .075  .065  .025  .034  .031  .033  .020  .048  .040  .066
                         .060  .042  .023  .028  .018  .054  .026  .050  .037  .044   .041 .0165
                                                                                                         .025
  5 JUNE     5.1  9.8    .048  .049  .035  .039  .030  .077  .031  .080  .070  .141
                         .028  .066  .085  .074  .033  .061  .057  .083  .131  .101   .066 .0321
                                                                                                         .011
 16 JUNE     5.5 10.2    .045  .103  .048  .101  .084  .073  .123  .058  .065  .068
                        0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .077 .0256
                                                                                                        -.017
 30 JUNE     5.5 10.3    .056  .080  .087  .036  .041  .032  .028  .046  .057  .072
                         .081  .073  .065  .098  .039  .054  .079  .069  .049  .046   .059 .0199
                                                                                                        -.006
 14 JULY     6.1 15.0    .046  .040  .066  .070  .034  .090  .042  .046  .053  .048
                        0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .054 .0170
                                                                                                         .014
 28 JULY     6.3 16.6    .067  .037  .116  .038  .039  .090  .075  .052  .057  .099
                        0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .067 .0276
                                                                                                        -.005
 11  AUG     6.7 16.9    .053  .077  .035  .072  .052  .060  .064  .077  .055  .071
                        0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .062 .0133
                                                                                                         .011
 25  AUG     6.7 16.9    .040  .033  .071  .077  .111  .054  .094  .089  .066  .089
                        0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .072 .0247
                                                                                                        -.027
 13 SEPT     6.8 16.9    .031  .054  .045  .048  .039  .031  .038  .066  .072  .026
                        0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .045 .0153
  4 OCT      8.0 18.0
                          0.0 = NOT RECORDED

                          MEASUREMENTS IN GRAMS
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     STUDY AREA CUMBER.#3                   AGROPYRON SPICATUM                                1981 REPRODUCTIVE
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        DATE      PHENOLOGY                             PRODUCTIVITY CLIPPINGS                                 MEAN   STD     GROWTH
                   VEG  REPR                                                                                         DEV   INCREMENT
*****************************************************************************************************************************

      16 JUNE       5.4 10.2      .157  .205  .203  .175  .104  .201  .198  .196  .119  .094
                                 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .165 .0440
                                                                                                                  .050
      14 JULY       6.1 15.0      .184  .160  .221  .231  .202  .253  .228  .249  .201  .226
                                 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .216 .0289
                                                                                                                 -.063
      28 JULY       6.3 16.6      .149  .112  .173  .164  .120  .143  .182  .194  .146  .139
                                 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .152 .0262
                                                                                                                 -.004
      11  AUG       6.7 16.9      .079  .089  .243  .162  .196  .138  .185  .110  .142  .142
                                 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .149 .0503
                                                                                                                 -.044
      25  AUG       6.7 16.9      .135  .138  .123  .149  .103  .077  .112  .092  .068  .049
                                 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .105 .0329
                                                                                                                  .039
      13 SEPT       6.8 16.9      .089  .108  .145  .105  .149  .184  .197  .123  .091  .245
                                 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .144 .0513

                                  0.0 = NOT RECORDED

                                  MEASUREMENTS IN GRAMS
     STUDY AREA DEMER                          AGROPYRON SPICATUM                          1981 VEGETATIVE
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    DATE      PHENOLOGY                        PRODUCTIVITY CLIPPINGS                      MEAN  STD    GROWTH
                VEG  REPR                                                                        DEV    INCREMENT
*****************************************************************************************************************

  15 APR        4.2  8.0
   2 MAY        4.8  9.1   .113  .116  .058  .074  .065  .064  .086  .092  .058  .068
                           .094  .144  .080  .084  .086  .043  .053  .068  .082  .034  .078 .0260
  20 MAY        5.5  9.5                                                                               .068
  17 JUNE       6.1 13.5   .196  .135  .183  .185  .098  .114  .108  .222  .123  .097
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .146 .0459
                                                                                                       .016
  29 JUNE       6.2 16.0   .118  .238  .223  .121  .150  .226  .128  .120  .101  .191
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .162 .0525
                                                                                                       .013
  14 JULY       6.3 16.3   .179  .145  .179  .221  .139  .159  .137  .182  .160  .244
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .175 .0351
                                                                                                       .019
  28 JULY       6.3 16.5   .155  .241  .217  .255  .223  .197  .137  .153  .156  .201
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .194 .0412
                                                                                                      -.066
  11  AUG       6.4 16.7   .162  .153  .127  .098  .118  .116  .050  .135  .187 0.000
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .127 .0396
                                                                                                      -.031
  25  AUG       6.5 16.8   .100  .187  .084  .058  .068  .067  .036  .124  .112  .123
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .096 .0433
                                                                                                      -.020
  12 SEPT       7.2 18.0   .032  .027  .087  .070  .098  .059  .067  .109  .105  .109
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .076 .0305
  25 SEPT       7.6 18.0
                             0.0 = NOT RECORDED

                             MEASUREMENTS IN GRAMS
   STUDY AREA DEMER                      AGROPYRON SPICATUM                              1981 REPRODUCTIVE
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  DATE      PHENOLOGY                         PRODUCTIVITY CLIPPINGS                          MEAN  STD   GROWTH
              VEG  REPR                                                                             DEV   INCREMENT
**********************************************************************************************************************

   2 JUNE     5.7 10.6     .247  .236  .363  .304  .159  .190  .233  .512  .198  .356
                           .211  .147  .162  .346  .300  .267  .275  .263  .210 0.000   .262 .0889
                                                                                                            .071
  17 JUNE     6.1 13.5     .433  .318  .293  .553  .389  .263  .282  .266  .324  .206
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .333 .1009
                                                                                                            .039
  29 JUNE     6.2 16.0     .242  .355  .413  .369  .371  .321  .437  .434  .484  .295
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .372 .0730
                                                                                                           -.079
  14 JULY     6.3 16.3     .283  .379  .339  .308  .371  .164  .247  .253  .312  .277
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .293 .0640
                                                                                                            .006
  28 JULY     6.3 16.5     .280  .323  .305  .344  .323  .315  .256  .303  .263  .283
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .300 .0284
                                                                                                           -.012
  11  AUG     6.4 16.7     .220  .277  .246  .354  .362  .258  .352  .208  .291  .311
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .288 .0561
                                                                                                           -.146
  12 SEPT     7.2 18.0     .146  .148  .153  .129  .123  .128  .181  .122  .113  .172
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .142 .0225

                           0.0 = NOT RECORDED

                           MEASUREMENTS IN GRAMS
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        STUDY AREA HORSE CK.                  AGROPYRON SPICATUM                     1981 VEGETATIVE
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      DATE    PHENOLOGY                       PRODUCTIVITY CLIPPINGS                     MEAN  STD   GROWTH
               VEG  REPR                                                                       DEV   INCREMENT
**************************************************************************************************************

     2  MAY       4.7  8.0     .069  .047  .051  .071  .088  .078  .060  .085  .054  .080
                             .060  .083  .032  .108  .018  .049  .082  .077  .031  .042  .063 .0228
                                                                                                       .030
    19  MAY       5.3 10.1     .106  .073  .108  .066  .069  .108  .146  .100  .098  .054
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .093 .0273
                                                                                                      -.041
     3 JUNE       5.5 10.2     .073  .042  .051  .061  .042  .062  .032  .056  .047  .048
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .051 .0119
                                                                                                       .094
    16 JUNE       5.7 10.5     .148  .178  .204  .246  .074  .067  .119  .223  .101  .093
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .145 .0644
                                                                                                      -.021
    29 JUNE       5.9 14.1     .028  .270  .138  .204  .171  .093  .138  .064  .064  .077
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .125 .0745
                                                                                                      -.024
    14 JULY       6.2 15.0     .146  .097  .114  .102  .115  .123  .030  .099  .117  .066
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .101 .0323
                                                                                                       .033
    28 JULY       6.2 16.3     .062  .111  .075  .070  .065  .110  .051  .062  .113  .030
                             .191  .278  .140  .148  .228  .264  .173  .192  .183  .135  .134 .0723
                                                                                                      -.048
    11  AUG       6.4 16.6     .094  .061  .092  .078  .125  .098  .086  .094  .062  .075
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .086 .0189
                                                                                                      -.016
    25  AUG       6.5 16.9     .081  .044  .107  .070  .074  .068  .053  .040  .088  .076
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .070 .0204
                                                                                                      -.012
    12 SEPT       6.9 18.0     .066  .068  .057  .069  .073  .045  .064  .052  .038  .036
                             .047  .067  .075 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .058 .0133
    25 SEPT       8.0 18.0
                              0.0 = NOT RECORDED

                              MEASUREMENTS IN GRAMS
    STUDY AREA HORSE CK.                     AGROPYRON SPICATUM                          1982 REPRODUCTIVE
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   DATE     PHENOLOGY                         PRODUCTIVITY CLIPPINGS                          MEAN  STD   GROWTH
             VEG  REPR                                                                             DEV   INCREMENT
*******************************************************************************************************************


  19  MAY      5.3 10.1      .150  .110  .171  .088  .132  .117  .230  .096  .108  .129
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .133 .0421
                                                                                                        .021
   3 JUNE      5.5 10.2      .075  .078  .237  .175  .232  .103  .218  .136  .170  .119
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .154 .0614
                                                                                                        .114
  16 JUNE      5.7 10.5      .254  .499  .214  .236  .315  .271  .236  .238  .151 0.000
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .268 .0970
                                                                                                       -.043
  29 JUNE      5.9 14.1      .342  .384  .287  .184  .247  .168  .206  .131  .098  .204
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .225 .0907
                                                                                                       -.050
  14 JULY      6.2 15.0      .282  .165  .192  .225  .145  .114  .164  .126  .182  .155
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .175 .0494
                                                                                                        .018
  28 JULY      6.2 16.3      .191  .278  .140  .148  .228  .264  .173  .192  .183  .135
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .193 .0497
                                                                                                       -.045
  11  AUG      6.4 16.6      .107  .113  .209  .099  .177  .187  .179  .096  .168  .145
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .148 .0415
                                                                                                        .020
  25  AUG      6.5 16.9      .106  .116  .174  .277  .154  .109  .207  .150  .137  .251
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .168 .0595
                                                                                                       -.059
  12 SEPT      6.9 18.0      .072  .117  .107  .092  .183  .088  .106 0.000 0.000 0.000
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .109 .0357

                              0.0 = NOT RECORDED

                              MEASUREMENTS IN GRAMS
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     STUDY AREA OWL DRAW                 AGROPYRON SPICATUM                         1981 VEGETATIVE
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   DATE      PHENOLOGY                       PRODUCTIVITY CLIPPINGS                      MEAN  STD    GROWTH
              VEG  REPR                                                                        DEV    INCREMENT
**************************************************************************************************************
  15 APR      3.1  8.0
   1 MAY      4.6  8.0
  25  MAY     4.8  9.0     .032  .047  .071  .074  .070  .077  .032  .044  .062  .083
                           .063  .050  .053  .066  .034  .061  .045  .037  .048  .023   .054 .0171
                                                                                                      -.010
   8 JUNE     5.1   9.0    .072  .044  .033  .030  .044  .036  .069  .037  .037  .034
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .044 .0149
                                                                                                       .031
  15 JUNE     5.6   9.0    .091  .066  .086  .064  .101  .066  .060  .089  .066  .060
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .075 .0151
                                                                                                       .028
  28 JUNE     5.9 10.0     .093  .074  .101  .079  .071  .110  .112  .134  .116  .134
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .102 .0230
                                                                                                      -.020
  13 JULY     6.1 15.5     .107  .077  .051  .079  .080  .039  .043  .088  .098  .115
                           .027  .095  .089  .148  .082  .066  .046  .077  .095  .145   .082 .0322
                                                                                                      -.006
  27 JULY     6.2 15.8     .095  .070  .099  .095  .047  .067  .082  .088  .029  .092
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .076 .0232
                                                                                                       .008
  10  AUG     6.2 16.0     .089  .067  .085  .084  .059  .081  .061  .105  .104  .108
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .084 .0179
                                                                                                      -.026
  24  AUG     6.5 16.9     .090  .093  .043  .050  .074  .090  .028  .045  .054  .048
                           .058  .060  .045  .045  .045  .039  .031  .086  .067  .066   .058 .0199
                                                                                                       .000
  11 SEPT     6.8 17.7     .083  .079  .051  .075  .028  .042  .042  .026  .078  .079
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .058 .0228
  25 SEPT     8.0 18.0
                            0.0 = NOT RECORDED

                            MEASUREMENTS IN GRAMS
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STUDY AREA OWL DRAW AGROPYRON SPICATUM 1981 REPRODUCTIVE

DATE	PHENOLOGY		PRODUCTIVITY CLIPPINGS										MEAN	STD	GROWTH
	VEG	REPR												DEV	INCREMENT
8 JUNE	5.1	9.0	.099	.079	.091	.075	.127	.078	.058	.089	.085	.087			
			0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	.087	.0179	
															.029
15 JUNE	5.6	9.0	.098	.094	.137	.098	.163	.105	.103	.135	.102	.126			
			0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	.116	.0229	
															.077
28 JUNE	5.9	10.0	.165	.154	.197	.167	.198	.185	.148	.159	.280	.276			
			0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	.193	.0480	
															-.035
27 JULY	6.2	15.8	.147	.114	.122	.122	.143	.170	.198	.269	.175	.116			
			0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	.158	.0483	
															-.020
10 AUG	6.2	16.0	.142	.140	.116	.130	.131	.167	.135	0.000	0.000	0.000			
			0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	.137	.0156	
															-.011
11 SEPT	6.8	17.7	.163	.164	.125	.131	.102	.103	.127	.115	.108	0.000			
			0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	.126	.0234	

0.0 = NOT RECORDED

MEASUREMENTS IN GRAMS

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   STUDY AREA RED WASH 2                    AGROPYRON SPICATUM                        1981 VEGETATIVE
              ----------                  -----------------------

  DATE     PHENOLOGY                          PRODUCTIVITY CLIPPINGS                              MEAN  STD   GROWTH
            VEG  REPR                                                                                 DEV   INCREMENT
*******************************************************************************************************************

 2  MAY      4.6   8.0      .022  .020  .012  .028  .021  .023  .016  .016  .025  .026
                            .028  .019  .022  .031  .021  .020  .030  .029  .025  .025    .023 .0050
                                                                                                            .051
 4 JUNE      5.5   9.9      .093  .078  .058  .093  .060  .085  .095  .068  .053  .061
                           0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000    .074 .0163
                                                                                                            .001
15 JUNE      5.6  10.1      .041  .128  .093  .079  .049  .053  .073  .093  .076  .077
                            .083  .060  .088  .057 0.000 0.000 0.000 0.000 0.000 0.000    .075 .0225
                                                                                                            .003
29 JUNE      5.7  10.3      .087  .109  .109  .084  .086  .039  .076  .058  .078  .052
                            .097  .081  .057  .049  .071  .057  .083  .071  .073  .135    .078 .0232
                                                                                                            .004
13 JULY      5.8  15.2      .076  .118  .049  .087  .092  .084  .081  .048  .079  .101
                           0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000    .081 .0213
                                                                                                            .060
27 JULY      6.1  15.9      .193  .140  .078  .109  .140  .229  .117  .130  .168  .110
                           0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000    .141 .0445
                                                                                                           -.097
10  AUG      6.5  16.5      .030  .031  .043  .053  .051  .048  .052  .030  .051  .055
                           0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000    .044 .0102
                                                                                                            .023
25  AUG      6.5  16.5      .068  .060  .040  .087  .033  .105  .066  .049  .039  .124
                           0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000    .067 .0301
                                                                                                            .030
13 SEPT      6.5  16.6      .095  .083  .079  .100  .117  .031  .166  .076  .115  .104
                           0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000    .097 .0347
 3  OCT      6.9  18.0
                            0.0 = NOT RECORDED

                            MEASUREMENTS IN GRAMS
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        STUDY AREA RED WASH 2           AGROPYRON SPICATUM                    1981 REPRODUCTIVE
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      DATE      PHENOLOGY                      PRODUCTIVITY CLIPPINGS                       MEAN  STD   GROWTH
                 VEG  REPR                                                                        DEV   INCREMENT
**************************************************************************************************************

      4 JUNE     5.5  9.9     .118  .110  .124  .126  .246  .127  .118  .110  .158  .179
                             0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .142 .0427
                                                                                                        .047
     15 JUNE     5.6 10.1     .228  .234  .266  .117  .149  .140 0.000 0.000 0.000 0.000
                             0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .189 .0611
                                                                                                        .002
     13 JULY     5.8 15.2     .237  .193  .229  .239  .241  .129  .155  .184  .088  .217
                             0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .191 .0525
                                                                                                       -.001
     27 JULY     6.1 15.9     .196  .140  .193  .242  .131  .135  .320  .158  .192  .198
                             0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .191 .0575
                                                                                                        .005
     25  AUG     6.5 16.5     .141  .262  .225  .194  .323  .215  .080  .133  .223  .155
                             0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .195 .0704
                                                                                                       -.014
     13 SEPT     6.5 16.6     .104  .103  .143  .222  .316  .216  .209  .121  .206  .171
                             0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .181 .0664

                               0.0 = NOT RECORDED

                               MEASUREMENTS IN GRAMS
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STUDY AREA HORSE CK.                  ARTEMISIA NOVA                                       1981 VEGETATIVE
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   DATE    PHENOLOGY                              PRODUCTIVITY CLIPPINGS                            MEAN  STD    GROWTH
             VEG  REPR                                                                                     DEV    INCREMENT
****************************************************************************************************************************

  2 MAY      2.9  8.0
 19  MAY     3.2  9.1      .009  .011  .008  .007  .010  .008  .006  .019  .012  .008
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .010 .0037
                                                                                                              -.007
  3 JUNE     3.3  9.4      .003  .004  .003  .003  .004  .001  .002  .002  .002  .003
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .003 .0009
                                                                                                               .009
 17 JUNE     3.6  9.5      .010  .010  .018  .014  .013  .009  .008  .010  .019  .011
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .012 .0038
                                                                                                               .042
 29 JUNE     4.2  9.6      .061  .055  .056  .039  .045  .066  .030  .047  .091  .048
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .054 .0168
                                                                                                               .027
 14 JULY     4.3  9.6      .061  .107  .082  .075  .097  .057  .054  .096  .089  .094
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .081 .0187
                                                                                                              -.048
 28 JULY     4.3  9.6      .046  .041  .032  .024  .013  .037  .039  .045  .039  .017
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .033 .0116
                                                                                                               .002
 11  AUG     4.3  9.6      .039  .038  .042  .053  .021  .022  .036  .039  .039  .023
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .035 .0102
                                                                                                               .021
 25  AUG     4.5  9.8      .066  .074  .044  .061  .095  .055  .035  .028  .063  .038
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .056 .0203
                                                                                                              -.005
 12 SEPT     5.1 10.8      .036  .048  .048  .049  .096  .037  .020  .089  .037  .045
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .051 .0238
                                                                                                              -.023
 25 SEPT     5.4 13.5      .018  .014  .042  .016  .024  .045  .026  .027  .033  .032
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .028 .0105

                           0.0 = NOT RECORDED

                           MEASUREMENTS IN GRAMS
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     STUDY AREA OWL DRAW                    ARTEMISIA NOVA                                1981 VEGETATIVE
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    DATE     PHENOLOGY                              PRODUCTIVITY CLIPPINGS                            MEAN  STD    GROWTH
              VEG  REPR                                                                                      DEV    INCREMENT
*******************************************************************************************************************************

     1  MAY     2.9   8.0
    25  MAY     3.1   9.0     .001  .002  .003  .003  .005  .003  .002  .004  .003  .002
                             0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .003 .0011
                                                                                                         .001
     8 JUNE     3.3   9.3     .002  .001  .002  .002  .004  .005  .005  .005  .004  .005
                              .004  .006  .004  .003  .003  .006  .004  .005 0.000 0.000   .004 .0015
                                                                                                         .008
    15 JUNE     3.6   9.4     .008  .010  .012  .010  .021  .016  .016  .010  .008 0.000
                             0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .012 .0044
                                                                                                         .020
    28 JUNE     3.9   9.5     .033  .067  .027  .025  .030  .028  .026  .048  .024  .012
                             0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .032 .0152
                                                                                                        -.001
    13 JULY     4.1   9.6     .025  .038  .033  .029  .033  .023  .029  .040  .022  .037
                             0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .031 .0063
                                                                                                         .002
    27 JULY     4.2   9.6     .050  .028  .016  .029  .031  .056  .024  .023  .037  .037
                             0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .033 .0123
                                                                                                        -.016
    10  AUG     4.3   9.7     .030  .024  .009  .025  .008  .015  .016  .016  .009  .017
                             0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .017 .0074
                                                                                                         .013
    24  AUG     4.5   9.8     .034  .024  .023  .021  .023  .040  .038  .027  .036  .033
                             0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .030 .0071
                                                                                                        -.000
    11 SEPT     4.8  13.1     .022  .035  .006  .026  .030  .016  .066  .033  .039  .023
                             0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .030 .0160
                                                                                                        -.012
    24 SEPT     5.1  13.5     .015  .022  .022  .011  .017  .014  .028  .024  .011  .010
                             0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .017 .0063

                               0.0 = NOT RECORDED

                               MEASUREMENTS IN GRAMS
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STUDY AREA SWEETWATER   ARTEMISIA NOVA   1981 VEGETATIVE

DATE	PHENOLOGY VEG	 REPR	PRODUCTIVITY CLIPPINGS										MEAN	STD DEV	GROWTH INCREMENT
21 MAY	3.0	8.0													
25 MAY	3.3	9.0	.005	.005	.008	.004	.005	.004	.004	.006	.004	.003			
			.003	.005	.004	.003	.001	.004	.003	.004	.003	.003	.004	.0014	
															.001
9 JUNE	3.5	9.4	.006	.004	.005	.004	.005	.005	.004	.006	.003	.004			
			0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	.005	.0010	
															.001
17 JUNE	3.5	9.4	.007	.006	.006	.007	.006	.004	.005	.004	.006	.008			
			0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	.006	.0013	
															.025
1 JULY	4.2	9.5	.033	.017	.024	.027	.026	.030	.041	.043	.038	.032			
			0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	.031	.0081	
															-.010
15 JULY	4.2	9.6	.020	.012	.015	.028	.014	.015	.016	.036	.027	.030			
			0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	.021	.0083	
															.010
29 JULY	4.3	9.6	.035	.040	.025	.028	.024	.015	.019	.022	.079	.021			
			0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	.031	.0185	
															-.003
12 AUG	4.4	9.7	.023	.030	.027	.022	.023	.032	.030	.030	.042	.017			
			0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	.028	.0069	
															-.017
24 AUG	4.4	9.8	.009	.012	.018	.009	.007	.009	.009	.012	.007	.012			
			0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	.010	.0033	
															.017
12 SEPT	4.9	11.5	.036	.034	.017	.030	.018	.027	.038	.021	.029	.028			
			0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	.028	.0073	
															.004
4 OCT	5.0	12.0	.019	.035	.044	.044	.021	.022	.018	.034	.050	.029			
			0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	.032	.0116	

0.0 = NOT RECORDED

MEASUREMENTS IN GRAMS

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    STUDY AREA HORSE CK.               ARTEMISIA NOVA                                1981 REPRODUCTIVE
               ----------             -------------------------

  DATE     PHENOLOGY                           PRODUCTIVITY CLIPPINGS                            MEAN  STD   GROWTH
            VEG  REPR                                                                                  DEV   INCREMENT
*********************************************************************************************************************

. 19  MAY     3.2  9.1     .034  .018  .039  .058  .031  .030  .026  .021  .023  .032
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .031 .0114
                                                                                                          .020
   3 JUNE     3.3  9.4     .064  .035  .059  .076  .038  .041  .048  .062  .040  .048
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .051 .0135
                                                                                                          .021
  17 JUNE     3.6  9.5     .056  .088  .065  .049  .071  .111  .147  .046  .048  .036
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .072 .0346
                                                                                                          .066
  29 JUNE     4.2  9.6     .083  .133  .226  .178  .098  .072  .132  .261  .091  .106
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .138 .0639
                                                                                                         -.032
  14 JULY     4.3  9.6     .064  .132  .050  .146  .129  .099  .140  .087  .089  .127
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .106 .0333
                                                                                                          .037
  28 JULY     4.3  9.6     .254  .076  .099  .184  .208  .113  .113  .106  .119  .163
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .144 .0566
                                                                                                          .040
  11  AUG     4.3  9.6     .122  .074  .079  .672  .057  .100  .223  .154  .247  .108
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .184 .1827
                                                                                                         -.016
  25  AUG     4.5  9.8     .153  .153  .314  .212  .118  .141  .190  .125  .114  .159
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .168 .0599
                                                                                                          .038
  12 SEPT     5.1 10.8     .233  .191  .095  .134  .212  .233  .186  .351  .288  .138
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .206 .0760
                                                                                                         -.069
  25 SEPT     5.4 13.5     .029  .136  .176  .198  .151  .142  .100  .162  .088  .187
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .137 .0517

                              0.0 = NOT RECORDED

                              MEASUREMENTS IN GRAMS
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STUDY AREA OWL DRAW                   ARTEMISIA NOVA                                  1981 REPRODUCTIVE
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  DATE      PHENOLOGY                          PRODUCTIVITY CLIPPINGS                          MEAN  STD    GROWTH
             VEG  REPR                                                                               DEV    INCREMENT
********************************************************************************************************************

 25  MAY     3.1  9.0     .010  .016  .015  .024  .013  .012  .013  .013  .007  .017
                         0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .014 .0045
                                                                                                       .008
 15 JUNE     3.6  9.4     .028  .029  .039  .017  .012  .014  .011  .030  .018 0.000
                         0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .022 .0098
                                                                                                       .039
 28 JUNE     3.9  9.5     .040  .035  .063  .048  .068  .073  .077  .075  .078  .057
                         0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .061 .0158
                                                                                                      -.024
 13 JULY     4.1  9.6     .045  .028  .042  .042  .032  .037  .053  .028  .041  .022
                         0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .037 .0094
                                                                                                       .050
 27 JULY     4.2  9.6     .083  .141  .053  .060  .107  .049  .087  .083  .136  .071
                         0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .087 .0322
                                                                                                       .017
 10  AUG     4.3  9.7     .095  .175  .130  .142  .044  .040  .102  .113  .091  .110
                         0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .104 .0411
                                                                                                      -.024
 24  AUG     4.5  9.8     .102  .063  .094  .061  .069  .099  .081  .102  .084  .047
                         0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .080 .0194
                                                                                                       .034
 11 SEPT     4.8 13.1     .115  .071  .093  .157  .137  .162  .141  .047  .122  .095
                         0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .114 .0374
                                                                                                       .020
 24 SEPT     5.1 13.5     .184  .160  .083  .096  .135  .063  .089  .259  .120  .148
                         0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .134 .0580

                           0.0 = NOT RECORDED

                           MEASUREMENTS IN GRAMS
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      STUDY AREA SWEETWATER                         ARTEMISIA NOVA                                          1981 REPRODUCTIVE
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    DATE      PHENOLOGY                                    PRODUCTIVITY CLIPPINGS                                         MEAN  STD    GROWTH
               VEG  REPR                                                                                                        DEV   INCREMENT
************************************************************************************************************************************************

   9 JUNE      3.5  9.4      .007  .008  .010  .013  .012  .010  .012  .012  .010  .012
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .011 .0020
                                                                                                               .017
  17 JUNE      3.5  9.4      .034  .061  .018  .011  .020  .024  .019  .039  .010  .037
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .027 .0156
                                                                                                               .031
   1 JULY      4.2  9.5      .055  .086  .052  .080  .036  .068  .050  .062  .045  .052
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .059 .0156
                                                                                                              -.006
  15 JULY      4.2  9.6      .069  .053  .082  .024  .057  .025  .038  .041  .088 0.000
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .053 .0233
                                                                                                              -.010
  29 JULY      4.3  9.6      .029  .021  .022  .024  .060  .048  .027  .052  .087  .056
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .043 .0217
                                                                                                               .012
  12  AUG      4.4  9.7      .059  .059  .084  .070  .047  .042  .044  .021  .045  .071
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .054 .0181
                                                                                                               .031
  24  AUG      4.4  9.8      .078  .112  .070  .071  .051  .042  .108  .069  .058  .189
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .085 .0429
                                                                                                               .009
  12 SEPT      4.9 11.5      .140  .081  .060  .108  .052  .080  .133  .121  .086  .078
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .094 .0301
                                                                                                               .013
   4  OCT      5.0 12.0      .145  .142  .066  .071  .052  .073  .122  .043  .252 0.000
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .107 .0663

                              0.0 = NOT RECORDED

                              MEASUREMENTS IN GRAMS
   STUDY AREA BUD KIMBAL              ARTEMISIA TRIDENTATA                          1981 VEGETATIVE
              ----------            ------------------------

  DATE      PHENOLOGY                          PRODUCTIVITY CLIPPINGS                            MEAN  STD    GROWTH
             VEG  REPR                                                                                DEV    INCREMENT
*************************************************************************************************************************
  2 MAY      2.8  8.0

 19 MAY      3.2  9.0     .010  .006  .008  .004  .012  .015  .012  .010  .009  .009
                         0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .010 .0031
                                                                                                      -.004
  2 JUNE     3.3  9.3     .013  .005  .004  .002  .006  .006  .005  .005  .008  .005
                         0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .006 .0029
                                                                                                       .022
 17 JUNE     3.8  9.4     .018  .029  .026  .033  .038  .039  .025  .031  .019  .017
                         0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .028 .0079
                                                                                                       .029
 29 JUNE     4.2  9.5     .065  .107  .038  .040  .063  .047  .037  .058  .064  .048
                         0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .057 .0208
                                                                                                      -.014
 14 JULY     4.2  9.6     .021  .037  .047  .048  .036  .012  .046  .048  .049  .082
                         0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .043 .0187
                                                                                                      -.000
 28 JULY     4.4  9.6     .073  .041  .043  .050  .033  .059  .040  .032  .029  .021
                         0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .042 .0153
                                                                                                       .006
 11  AUG     4.4  9.7     .022  .096  .070  .049  .034  .021  .041  .020  .057  .075
                         0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .049 .0259
                                                                                                      -.004
 25  AUG     4.5  9.8     .054  .082  .041  .023  .038  .069  .024  .036  .050  .031
                         0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .045 .0192
                                                                                                      -.013
 12 SEPT     5.2 11.3     .049  .013  .031  .020  .049  .021  .019  .045  .037  .034
                         0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .032 .0132
                                                                                                       .014
 25 SEPT     5.4 13.0     .080  .043  .026  .016  .118  .019  .054  .025  .026  .046
                         0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .045 .0321

                          0.0 = NOT RECORDED

                          MEASUREMENTS IN GRAMS
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      STUDY AREA CEDAR MTN.                 ARTEMISIA TRIDENTATA                        1981 VEGETATIVE
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    DATE     PHENOLOGY                          PRODUCTIVITY CLIPPINGS                          . MEAN  STD    GROWTH
               VEG  REPR                                                                               DEV    INCREMENT
************************************************************************************************************************
     1 MAY      3.0  8.0
    27  MAY     3.2  9.1     .005  .002  .004  .003  .006  .006  .001  .001  .003  .003
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .003 .0018
                                                                                                         .003
     4 JUNE     3.3  9.1     .019  .013  .003  .004  .003  .002  .003  .005  .003  .008
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .006 .0056
                                                                                                         .009
    15 JUNE     3.4  9.3     .013  .014  .017  .016  .017  .017  .012  .014  .016  .017
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .015 .0019
                                                                                                        -.006
    27 JUNE     3.7  9.5     .008  .015  .006  .014  .010  .010  .014  .008  .005  .008
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .010 .0035
                                                                                                         .002
    13 JULY     4.2  9.7     .014  .026  .024  .010  .005  .010  .010  .005  .010  .008
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .012 .0073
                                                                                                         .010
    27 JULY     4.3  9.7     .018  .033  .018  .018  .019  .020  .020  .022  .018  .040
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .023 .0076
                                                                                                         .013
    10  AUG     4.6  9.8     .021  .039  .047  .040  .034  .041  .032  .042  .028  .031
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .036 .0077
                                                                                                        -.012
    25  AUG     4.9  9.8     .023  .031  .025  .017  .015  .034  .017  .029  .026  .015
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .023 .0069
                                                                                                         .018
    13 SEPT     5.5 10.8     .028  .065  .053  .029  .046  .044  .026  .049  .022  .050
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .041 .0141
                                                                                                        -.010
     3  OCT     5.8 12.8     .034  .034  .025  .029  .039  .033  .030  .022  .054  .015
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .032 .0105

                              0.0 = NOT RECORDED

                              MEASUREMENTS IN GRAMS
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   STUDY AREA CUMBER. #3              ARTEMISIA TRIDENTATA                         1981 VEGETATIVE
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  DATE      PHENOLOGY                          PRODUCTIVITY CLIPPINGS                          MEAN  STD   GROWTH
             VEG  REPR                                                                               DEV   INCREMENT
*****************************************************************************************************************************
   2 MAY      3.1  8.0
  26  MAY     3.2  9.0     .007  .008  .005  .003  .008  .008  .009  .001  .005  .005
                           .004  .002  .010 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .006 .0028
                                                                                                      .004
   5 JUNE     3.4  9.1     .005  .011  .016  .005  .012  .008 0.000 0.000 0.000 0.000
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .010 .0043
                                                                                                     -.004
  16 JUNE     3.4  9.2     .005  .004  .006  .005  .007  .007  .004  .006  .006  .003
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .005 .0013
                                                                                                      .003
  30 JUNE     3.8  9.3     .008  .009  .007  .006  .008  .007  .013  .011  .010 0.000
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .009 .0022
                                                                                                      .054
  14 JULY     4.2  9.4     .049  .068  .045  .045  .055  .063  .039  .116  .129  .017
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .063 .0346
                                                                                                     -.010
  28 JULY     4.3  9.5     .033  .072  .042  .047  .059  .049  .051  .042  .074  .056
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .053 .0131
                                                                                                      .011
  11  AUG     4.4  9.5     .031  .055  .089  .059  .052  .066  .070  .077  .067  .065
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .063 .0155
                                                                                                     -.009
  25  AUG     4.9  9.9     .023  .016  .060  .049  .039  .044  .037  .041  .140  .089
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .054 .0363
                                                                                                      .003
  13 SEPT     4.9 10.6     .039  .093  .085  .031  .041  .065  .036  .085  .076  .018
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .057 .0269
                                                                                                     -.007
   4  OCT     5.0 12.0     .054  .047  .055  .037  .058  .048  .044  .049  .026  .081
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .050 .0144

                            0.0 = NOT RECORDED

                            MEASUREMENTS IN GRAMS
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    STUDY AREA DEMER                 ARTEMISIA TRIDENTATA                       1981 VEGETATIVE
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   DATE     PHENOLOGY                       PRODUCTIVITY CLIPPINGS                      MEAN  STD   GROWTH
             VEG  REPR                                                                        DEV   INCREMENT
*******************************************************************************************************************
  15  APR    2.6   8.0
   2  MAY    3.1   8.0
  20  MAY    3.2   9.0     .005  .005  .003  .004  .006  .006  .008  .004 0.000 0.000
                         0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .005 .0016
   2  JUNE   3.3   9.1                                                                                .020
  17  JUNE   3.8   9.5     .034  .015  .023  .026  .034  .032  .019  .021  .021  .028
                         0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .025 .0066
                                                                                                      .028
  29  JUNE   4.3   9.5     .058  .062  .072  .061  .030  .034  .066  .088  .027  .032
                         0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .053 .0209
                                                                                                      .055
  14  JULY   4.4   9.5     .095  .112  .067  .075  .143  .085  .206  .092  .115  .092
                         0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .108 .0407
                                                                                                     -.055
  28  JULY   4.4   9.5     .059  .048  .043  .039  .058  .054  .060  .060  .041  .073
                         0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .054 .0107
                                                                                                     -.008
  11  AUG    4.4   9.5     .085  .028  .052  .019  .044  .050  .032  .038  .064  .040
                         0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .045 .0190
                                                                                                      .007
  25  AUG    4.5   9.5     .082  .062  .065  .060  .081  .055  .027  .036  .029  .026
                         0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .052 .0215
                                                                                                     -.023
  12 SEPT    5.1  10.6     .020  .035  .014  .033  .019  .035  .026  .025  .024  .063
                         0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .029 .0137
                                                                                                      .015
  25 SEPT    5.3  12.0     .038  .023  .066  .019  .026  .059  .048  .044  .047  .069
                         0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .044 .0176

                           0.0 = NOT RECORDED

                           MEASUREMENTS IN GRAMS
    STUDY AREA FARSON                    ARTEMISIA TRIDENTATA                         1981 VEGETATIVE
               ----------               -----------------------

   DATE     PHENOLOGY                          PRODUCTIVITY CLIPPINGS                        MEAN  STD   GROWTH
             VEG  REPR                                                                             DEV   INCREMENT
*****************************************************************************************************************

  2  MAY     3.2   8.0
 26  MAY     3.2   9.2      .003  .002  .001  .006  .002  .001  .004  .002  .003  .001
                           0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .003 .0016
                                                                                                          .002
  5 JUNE     3.3   9.2      .008  .005  .006  .005  .005  .004  .002  .003  .003  .006
                           0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .005 .0018
                                                                                                         -.000
 16 JUNE     3.4   9.2      .004  .004  .004  .005  .003  .006  .005  .004  .004  .006
                           0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .005 .0010
                                                                                                          .010
 30 JUNE     3.5   9.2      .039  .015  .016  .040  .006  .005  .006  .006  .006  .006
                           0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .015 .0138
                                                                                                          .034
 14 JULY     4.0   9.3      .029  .029  .101  .052  .101  .046  .025  .037  .036  .028
                           0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .048 .0290
                                                                                                         -.020
 28 JULY     4.2   9.3      .017  .053  .011  .038  .028  .024  .012  .023  .058  .025
                           0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .029 .0161
                                                                                                          .016
 11  AUG     4.4   9.4      .037  .040  .038  .039  .043  .035  .057  .060  .055  .043
                           0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .045 .0091
                                                                                                         -.015
 25  AUG     4.7   9.9      .020  .046  .041  .020  .025  .030  .030  .038  .030  .022
                           0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .030 .0090
                                                                                                         -.004
 12 SEPT     5.0  11.2      .028  .031  .021  .035  .023  .021  .017  .027  .045  .013
                           0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .026 .0093
                                                                                                          .003
  4  OCT     5.2  12.0      .034  .029  .054  .029  .019  .013  .030  .034  .033  .013
                           0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .029 .0120

                            0.0 = NOT RECORDED

                            MEASUREMENTS IN GRAMS
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     STUDY AREA HORSE CK.                    ARTEMISIA TRIDENTATA                          1981 VEGETATIVE
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   DATE      PHENOLOGY                         PRODUCTIVITY CLIPPINGS                               MEAN  STD   GROWTH
              VEG  REPR                                                                                   DEV   INCREMENT
************************************************************************************************************************
  2 MAY       2.8  8.0
 19  MAY      3.3  9.2   .012  .016  .010  .009  .009  .007  .008  .008  .005  .007
                         .008  .009  .008  .005  .006  .007  .005  .005  .003  .004   .008 .0030
                                                                                                     .025
  3 JUNE      3.5  9.5   .013  .022  .035  .022  .059  .022  .041  .036  .025  .059
                         .013  .042 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .032 .0158
                                                                                                     .001
 15 JUNE      4.2  9.5   .028  .041  .062  .019  .026  .029  .048  .033  .023  .028
                        0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .034 .0131
                                                                                                     .039
 29 JUNE      4.4  9.6   .053  .069  .062  .053  .078  .044  .047  .167  .010  .139
                        0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .072 .0467
                                                                                                     .087
 14 JULY      4.4  9.6   .138  .174  .229  .122  .119  .186  .194  .119  .130  .177
                        0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .159 .0384
                                                                                                     .037
 28 JULY      4.5  9.6   .172  .206  .124  .204  .139  .219  .133  .166  .199  .396
                        0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .196 .0779
                                                                                                    -.126
 11  AUG      4.5  9.7   .106  .099  .055  .074  .062  .046  .038  .066  .081 0.000
                        0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .070 .0229
                                                                                                     .006
 25  AUG      4.5  9.7   .082  .042  .082  .055  .052  .077  .076  .124  .115  .047
                        0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .075 .0277
                                                                                                    -.000
 12 SEPT      5.3 11.0   .085  .046  .090  .048  .131  .063  .183  .036  .035  .031
                        0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .075 .0493
                                                                                                    -.031
 24 SEPT      5.3 12.5   .053  .029  .117  .013  .023  .015  .012  .056  .053  .070
                        0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .044 .0330

                          0.0 = NOT RECORDED

                          MEASUREMENTS IN GRAMS
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       STUDY AREA MESA ANT.                ARTEMISIA TRIDENTATA                   1981 VEGETATIVE
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      DATE    PHENOLOGY                    PRODUCTIVITY CLIPPINGS                   MEAN  STD   GROWTH
               VEG  REPR                                                                 DEV   INCREMENT
**********************************************************************************************************
     2  MAY    3.1  8.0

    26  MAY    3.2  9.0    .006  .004  .004  .005  .007  .005  .003  .003  .004  .004
                           .006  .006  .005  .004  .005  .006  .005  .007  .006  .005   .005 .0012
                                                                                                    .000
     5 JUNE    3.3  9.2    .010  .005  .002  .001  .003  .009 0.000 0.000 0.000 0.000
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .005 .0037
                                                                                                    .001
    16 JUNE    3.4  9.3    .006  .004  .003  .004  .007  .006  .006  .008  .005  .008
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .006 .0017
                                                                                                    .017
    30 JUNE    3.4  9.3    .019  .012  .016  .024  .019  .031  .022  .026  .028  .029
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .023 .0061
                                                                                                    .015
    14 JULY    4.2  9.6    .028  .026  .046  .026  .042  .031  .029  .048  .047  .051
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .037 .0102
                                                                                                   -.012
    28 JULY    4.3  9.6    .012  .023  .018  .008  .052  .043  .015  .031  .035  .022
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .026 .0141
                                                                                                    .011
    11  AUG    4.7  9.7    .028  .048  .034  .042  .029  .030  .033  .036  .033  .054
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .037 .0086
                                                                                                   -.013
    24  AUG    4.8  9.8    .015  .029  .030  .017  .025  .020  .018  .023  .039  .024
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .024 .0072
                                                                                                    .034
    12 SEPT    5.0 11.3    .059  .054  .082  .070  .079  .047  .070  .045  .039  .032
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .058 .0172
                                                                                                   -.033
     4  OCT    5.3 12.2    .022  .029  .020  .022  .020  .027  .029  .022  .025  .029
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .025 .0037

                             0.0 = NOT RECORDED

                             MEASUREMENTS IN GRAMS
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        STUDY AREA OWL DRAW                   ARTEMISIA TRIDENTATA                     1981 VEGETATIVE
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      DATE    PHENOLOGY                       PRODUCTIVITY CLIPPINGS                     MEAN  STD   GROWTH
               VEG  REPR                                                                       DEV   INCREMENT
**************************************************************************************************************

     1  MAY     3.2  9.0
    25  MAY     3.3  9.1     .005  .004  .002  .005  .006  .004  .004  .002  .003  .003
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .004 .0013
                                                                                                       .022
     8 JUNE     3.4  9.2     .051  .020  .016  .032  .022  .025  .014  .029  .022  .026
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .026 .0104
                                                                                                      -.020
    15 JUNE     3.4  9.3     .003  .003  .006  .010  .005  .006  .004  .004  .007  .006
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .005 .0021
                                                                                                       .059
    28 JUNE     4.2  9.5     .063  .062  .044  .070  .047  .076  .065  .072  .059  .084
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .064 .0123
                                                                                                      -.001
    13 JULY     4.3  9.5     .060  .068  .060  .024  .078  .075  .058  .063  .079  .067
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .063 .0157
                                                                                                      -.012
    27 JULY     4.3  9.5     .040  .037  .054  .039  .014  .072  .079  .060  .049  .073
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .052 .0201
                                                                                                      -.030
    10  AUG     4.3  9.5     .021  .017  .026  .021  .016  .013  .009  .030  .045  .016
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .021 .0103
                                                                                                       .057
    24  AUG     4.4  9.5     .083  .073  .089  .059  .072  .065  .134  .079  .047  .080
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .078 .0232
                                                                                                      -.042
    11 SEPT     4.8 12.7     .024  .025  .040  .047  .026  .036  .050  .031  .042 0.000
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .036 .0097
                                                                                                       .002
    24 SEPT     5.2 12.8     .060  .040  .022  .039  .059  .016  .007  .063  .028  .042
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .038 .0194

                              0.0 = NOT RECORDED

                              MEASUREMENTS IN GRAMS
        STUDY AREA RED WASH 2                ARTEMISIA TRIDENTATA                     1981 VEGETATIVE
                   ----------               ------------------------

      DATE    PHENOLOGY                      PRODUCTIVITY CLIPPINGS                     MEAN  STD   GROWTH
               VEG  REPR                                                                      DEV   INCREMENT
**************************************************************************************************************

     1 MAY        3.2  8.0
     4 JUNE       3.4  9.0     .003  .003  .002  .003  .002  .005  .003  .003  .005  .003
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .003 .0010
                                                                                                      .003
    15 JUNE       3.5  9.2     .007  .007  .005  .005  .005  .006  .007  .006  .006  .007
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .006 .0009
                                                                                                      .005
    29 JUNE       3.6  9.3     .012  .011  .012  .016  .017  .007  .011  .012  .011  .007
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .012 .0032
                                                                                                      .025
    13 JULY       4.3  9.6     .074  .023  .021  .035  .023  .028  .045  .037  .036  .043
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .037 .0156
                                                                                                      .013
    27 JULY       4.3  9.6     .052  .067  .065  .066  .071  .032  .026  .070  .024  .018
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .049 .0216
                                                                                                      .023
    10  AUG       4.5  9.6     .054  .082  .094  .076  .067  .082  .058  .052  .086  .066
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .072 .0144
                                                                                                     -.013
    25  AUG       4.8  9.9     .072  .056  .093  .068  .040  .049  .048  .049  .019  .094
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .059 .0234
                                                                                                     -.017
    13 SEPT       5.5 11.2     .037  .039  .082  .021  .032  .049  .033  .036  .055  .035
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .042 .0169
                                                                                                     -.017
     3  OCT       5.7 12.0     .021  .026  .017  .014  .023  .021  .018  .018  .061  .029
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .025 .0135

                              0.0 = NOT RECORDED

                              MEASUREMENTS IN GRAMS
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   STUDY AREA SHOSHONI 7                ARTEMISIA TRIDENTATA                        1981 VEGETATIVE
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  DATE      PHENOLOGY                         PRODUCTIVITY CLIPPINGS                             MEAN  STD    GROWTH
             VEG  REPR                                                                                DEV   INCREMENT
*******************************************************************************************************************
   1  MAY     2.9  8.0
  20  MAY     3.2  9.1     .004  .004  .004  .004  .005  .005  .004  .013  .006  .002
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .005 .0030
                                                                                                            .003
   3 JUNE     3.2  9.1     .013  .015  .010  .008  .004  .004  .004  .007  .008  .003
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .008 .0041
                                                                                                           -.003
  18 JUNE     3.8  9.4     .002  .006  .013  .004  .005  .004  .004  .004  .004  .005
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .005 .0030
                                                                                                            .030
  30 JUNE     4.1  9.5     .048  .038  .037  .026  .044  .032  .031  .025  .024  .044
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .035 .0086
                                                                                                           -.009
  13 JULY     4.3  9.6     .035  .020  .031  .012  .023  .033  .013  .034  .022  .032
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .026 .0087
                                                                                                           -.002
  27 JULY     4.3  9.6     .038  .022  .021  .018  .020  .024  .020  .014  .040  .021
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .024 .0084
                                                                                                            .013
  10  AUG     4.5  9.7     .015  .021  .053  .056  .026  .037  .042  .044  .039  .036
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .037 .0132
                                                                                                            .014
  24  AUG     4.6  9.7     .056  .046  .037  .047  .070  .057  .026  .045  .062  .058
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .050 .0129
                                                                                                           -.027
  11 SEPT     4.9 11.6     .020  .016  .014  .038  .019  .013  .011  .015  .058  .026
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .023 .0146
                                                                                                            .006
  24 SEPT     5.1 12.5     .032  .015  .036  .071  .017  .023  .027  .035  .016  .021
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .029 .0166

                            0.0 = NOT RECORDED

                            MEASUREMENTS IN GRAMS
   STUDY AREA SWEETWATER            ARTEMISIA TRIDENTATA                       1981 VEGETATIVE
              ----------          ------------------------

  DATE      PHENOLOGY                         PRODUCTIVITY CLIPPINGS                              MEAN  STD    GROWTH
             VEG  REPR                                                                                 DEV    INCREMENT
**********************************************************************************************************************
 21  MAY     3.1  9.0
 25  MAY     3.2  9.1    .016  .020  .016  .020  .023  .021  .015  .010  .012  .015
                         .010  .010  .014  .021  .023  .015  .009  .009  .012  .018   .015 .0047
                                                                                                       .007
  9 JUNE     3.3  9.2    .033  .021  .021  .020  .020  .018  .019  .027  .017  .034
                         .027  .033  .025  .015  .019  .021  .021  .021  .032  .014   .023 .0061
                                                                                                      -.016
 17 JUNE     3.4  9.4    .013  .008  .006  .004  .006  .005  .008  .007  .005  .006
                        0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .007 .0025
                                                                                                       .036
  1 JULY     3.6  9.5    .066  .043  .035  .043  .054  .061  .016  .029  .036  .041
                        0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .042 .0150
                                                                                                      -.002
 15 JULY     4.3  9.5    .061  .014  .027  .047  .047  .033  .034  .032  .093  .018
                        0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .041 .0231
                                                                                                       .004
 29 JULY     4.3  9.5    .058  .038  .064  .057  .098  .021  .018  .026  .017  .048
                        0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .045 .0258
                                                                                                       .007
 12  AUG     4.5  9.6    .070  .065  .045  .050  .052  .040  .063  .036  .047  .047
                        0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .052 .0111
                                                                                                      -.011
 24  AUG     4.6  9.7    .044  .042  .036  .034  .068  .041  .027  .034  .050  .034
                        0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .041 .0115
                                                                                                       .021
 12 SEPT     4.9 11.3    .038  .059  .050  .077  .058  .063  .039  .083  .085  .072
                        0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .062 .0169
                                                                                                      -.028
  4  OCT     5.0 12.5    .047  .012  .021  .047  .025  .045  .040  .044  .042  .024
                        0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .035 .0129

                         0.0 = NOT RECORDED

                         MEASUREMENTS IN GRAMS
   STUDY AREA UPPER GOV.                 ARTEMISIA TRIDENTATA                       1981 VEGETATIVE
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 DATE       PHENOLOGY                      PRODUCTIVITY CLIPPINGS                            MEAN  STD   GROWTH
             VEG  REPR                                                                             DEV   INCREMENT
************************************************************************************************************************
  1  MAY      2.9  8.0
 25  MAY      3.2  9.0     .007  .010  .011  .010  .006  .008  .008  .007  .007  .009
                           .008  .007  .008  .008  .008  .007  .009  .006  .006  .007    .008 .0014
                                                                                                        -.002
  9 JUNE      3.4  9.3     .004  .009  .006  .008  .004  .007  .008  .005  .006  .005
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000    .006 .0018
                                                                                                        -.001
 17 JUNE      3.4  9.3     .004  .007  .004  .006  .008  .007  .003  .008  .004  .006
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000    .006 .0018
                                                                                                         .024
 30 JUNE      3.9  9.5     .030  .030  .057  .034  .017  .017  .030  .040  .025  .020
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000    .030 .0121
                                                                                                         .014
 13 JULY      4.2  9.5     .018  .047  .038  .039  .038  .054  .052  .045  .055  .057
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000    .044 .0117
                                                                                                         .016
 31 JULY      4.4  9.5     .043  .051  .077  .051  .067  .038  .057  .066  .080  .076
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000    .061 .0148
                                                                                                        -.031
 10  AUG      4.4  9.5     .007  .027  .034  .036  .053  .026  .018  .041  .025  .031
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000    .030 .0126
                                                                                                         .039
 24  AUG      4.6  9.5     .129  .056  .045  .081  .045  .074  .045  .064  .068  .080
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000    .069 .0254
                                                                                                        -.054
 11 SEPT      4.8  9.9     .014  .028  .012  .011  .009  .008  .012  .027  .014  .011
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000    .015 .0071
                                                                                                         .022
 24 SEPT      5.0  9.9     .040  .037  .054  .053  .046  .027  .013  .041  .033  .017
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000    .036 .0139

                            0.0 = NOT RECORDED

                            MEASUREMENTS IN GRAMS
   STUDY AREA BUD KIMBAL               ARTEMISIA TRIDENTATA                          1981 REPRODUCTIVE
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   DATE      PHENOLOGY                          PRODUCTIVITY CLIPPINGS                              MEAN   STD    GROWTH
              VEG  REPR                                                                                    DEV   INCREMENT
****************************************************************************************************************************

 19  MAY      3.2  9.0    .014  .026  .025  .028  .035  .018  .022  .011  .008  .019
                         0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .021 .0083
                                                                                                          .030
  2 JUNE      3.3  9.3    .070  .059  .038  .050  .049  .042  .053  .069  .037  .042
                         0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .051 .0119
                                                                                                          .008
 17 JUNE      3.8  9.4    .012  .061  .058  .060  .062  .054  .086  .062  .105  .034
                         0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .059 .0252
                                                                                                          .054
 29 JUNE      4.2  9.5    .154  .085  .053  .116  .124  .086  .182  .127  .101  .109
                         0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .114 .0366
                                                                                                         -.054
 14 JULY      4.2  9.6    .065  .105  .026  .050  .035  .055  .079  .074  .044  .061
                         0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .059 .0230
                                                                                                          .038
 28 JULY      4.4  9.6    .144  .074  .128  .131  .039  .079  .090  .059  .135  .092
                         0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .097 .0358
                                                                                                         -.011
 11  AUG      4.4  9.7    .060  .116  .257  .115  .046  .024  .088  .034  .100  .024
                         0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .086 .0698
                                                                                                          .036
 25  AUG      4.5  9.8    .060  .108  .090  .160  .169  .175  .136  .110  .085  .135
                         0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .123 .0386
                                                                                                         -.055
 12 SEPT      5.2 11.3    .061  .111  .077  .052  .093  .062  .064  .044  .050  .063
                         0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .068 .0206
                                                                                                          .173
 25 SEPT      5.4 13.0    .230  .158  .145  .216  .183  .206  .321  .413  .103  .434
                         0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .241 .1124

                           0.0 = NOT RECORDED

                           MEASUREMENTS IN GRAMS
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    STUDY AREA CEDAR MTN.              ARTEMISIA TRIDENTATA                              1981 REPRODUCTIVE
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  DATE      PHENOLOGY                            PRODUCTIVITY CLIPPINGS                         MEAN  STD   GROWTH
             VEG  REPR                                                                               DEV   INCREMENT
*******************************************************************************************************************

 27  MAY      3.2  9.1      .031  .017  .022  .023  .013  .011  .035  .027  .037  .022
                           0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .024 .0088
                                                                                                         .006
  4 JUNE      3.3  9.1      .019  .025  .026  .038  .026  .037  .034  .027  .034  .030
                           0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .030 .0061
                                                                                                        -.007
 15 JUNE      3.4  9.3      .029  .023  .021  .036  .026  .021  .022  .020  .018  .015
                           0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .023 .0060
                                                                                                         .042
 27 JUNE      3.7  9.5      .053  .101  .126  .038  .029  .058  .046  .062  .085  .050
                           0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .065 .0302
                                                                                                        -.017
 13 JULY      4.2  9.7      .049  .055  .057  .042  .051  .043  .031  .056  .038  .060
                           0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .048 .0094
                                                                                                         .036
 27 JULY      4.3  9.7      .099  .053  .056  .045  .096  .081  .074  .070  .096  .167
                           0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .084 .0349
                                                                                                        -.012
 10  AUG      4.6  9.8      .077  .054  .036  .052  .064  .061  .103  .042  .127  .098
                           0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .071 .0294
                                                                                                        -.013
 25  AUG      4.9  9.8      .053  .035  .044  .054  .017  .023  .168  .069  .057  .068
                           0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .059 .0421
                                                                                                         .031
 13 SEPT      5.5 10.8      .095  .087  .074  .052  .032  .060  .175  .118  .059  .150
                           0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .090 .0454
                                                                                                        -.008
  3  OCT      5.8 12.8      .130  .088  .068  .031  .075  .082  .073  .082  .026  .169
                           0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .082 .0421

                            0.0 = NOT RECORDED

                            MEASUREMENTS IN GRAMS
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   STUDY AREA CUMBER. #3                 ARTEMISIA TRIDENTATA                           1981 REPRODUCTIVE
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  DATE      PHENOLOGY                            PRODUCTIVITY CLIPPINGS                             MEAN  STD    GROWTH
             VEG  REPR                                                                                  DEV    INCREMENT
*************************************************************************************************************************

 26  MAY      3.2  9.0      .037  .016  .019  .035 0.000 0.000 0.000 0.000 0.000 0.000
                           0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .027 .0108
                                                                                                          -.002
  5 JUNE      3.4  9.1      .027  .019  .026  .036  .016  .019  .024  .029  .025  .031
                           0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .025 .0061
                                                                                                           .009
 16 JUNE      3.4  9.2      .041  .030  .030  .039  .045  .023  .042  .030  .029  .036
                           0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .035 .0071
                                                                                                           .022
 30 JUNE      3.8  9.3      .067  .041  .029  .082  .050  .046  .070  .054  .061  .066
                           0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .057 .0157
                                                                                                           .045
 14 JULY      4.2  9.4      .049  .164  .090  .060  .217  .056  .135  .046  .142  .057
                           0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .102 .0594
                                                                                                          -.057
 28 JULY      4.3  9.5      .057  .067  .032  .062  .035  .028  .039  .034  .053  .039
                           0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .045 .0139
                                                                                                           .019
 11  AUG      4.4  9.5      .031  .055  .089  .059  .052  .066  .070  .077  .067  .065
                           0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .063 .0155
                                                                                                          -.013
 25  AUG      4.9  9.9      .065  .042  .112  .064  .040  .044  .042  .018  .052  .023
                           0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .050 .0264
                                                                                                           .015
 13 SEPT      4.9 10.6      .048  .076  .101  .027  .046  .018  .153  .105  .040  .041
                           0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .065 .0425
                                                                                                          -.018
  4  OCT      5.0 12.0      .058  .045  .056  .064  .064  .029  .025  .040  .028  .071
                           0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .048 .0169

                             0.0 = NOT RECORDED

                            MEASUREMENTS IN GRAMS
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    STUDY AREA DEMER                    ARTEMISIA TRIDENTATA                        1981 REPRODUCTIVE
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   DATE      PHENOLOGY                              PRODUCTIVITY CLIPPINGS                               MEAN  STD   GROWTH
              VEG  REPR                                                                                        DEV   INCREMENT
***************************************************************************************************************************


  20  MAY      3.2  9.0      .042  .060  .028  .033  .027  .037  .034  .039  .038  .018
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .036 .0111
                                                                                                        -.015
   2 JUNE      3.3  9.1      .016  .020  .017  .018  .024  .021  .035  .027  .019  .016
                             .017  .028  .021  .019  .017  .029  .019  .023  .023  .012   .021 .0054
                                                                                                         .045
  17 JUNE      3.8  9.5      .050  .099  .084  .054  .042  .022  .109  .048  .089 0.000
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .066 .0296
                                                                                                         .047
  29 JUNE      4.3  9.5      .096  .116  .071  .061  .131  .214  .127  .033  .212  .075
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .114 .0607
                                                                                                        -.054
  14 JULY      4.4  9.5      .050  .061  .045  .074  .051  .047  .050  .075  .066  .075
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .059 .0123
                                                                                                         .041
  28 JULY      4.4  9.5      .060  .097  .090  .121  .166  .122  .077  .076  .078  .121
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .101 .0316
                                                                                                        -.009
  11  AUG      4.4  9.5      .276  .083  .034  .074  .040  .098  .073  .103  .063  .075
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .092 .0683
                                                                                                        -.013
  28  AUG      4.5  9.5      .088  .128  .146  .041  .062  .106  .042  .052  .044  .082
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .079 .0377
                                                                                                         .008
  12 SEPT      5.1 10.6      .060  .071  .052  .102  .053  .136  .067  .149  .089  .089
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .087 .0337
                                                                                                         .147
  25 SEPT      5.3 12.0      .282  .539  .163  .215  .189  .368  .198  .110  .147  .129
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .234 .1316

                              0.0 = NOT RECORDED

                              MEASUREMENTS IN GRAMS
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        STUDY AREA FARSON                      ARTEMISIA TRIDENTATA                         1981 REPRODUCTIVE
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      DATE     PHENOLOGY                             PRODUCTIVITY CLIPPINGS                          MEAN  STD    GROWTH
                 VEG  REPR                                                                                DEV   INCREMENT
*************************************************************************************************************************


     26  MAY      3.2  9.2    .033  .034  .028  .017  .037  .039  .030  .023  .017  .028
                             0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .029 .0077
                                                                                                            -.005
      5 JUNE      3.3  9.2    .030  .036  .014  .033  .046  .021  .012  .013  .013  .022
                             0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .024 .0118
                                                                                                             .000
     16 JUNE      3.4  9.2    .011  .026  .019  .027  .027  .024  .019  .023  .037  .031
                             0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .024 .0071
                                                                                                            -.012
     30 JUNE      3.5  9.2    .011  .016  .014  .012  .009  .016  .010  .009  .011  .016
                             0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .012 .0029
                                                                                                             .048
     14 JULY      4.0  9.3    .086  .067  .069  .067  .042  .034  .052  .101  .060  .030
                             0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .061 .0223
                                                                                                            -.008
     28 JULY      4.2  9.3    .065  .026  .127  .040  .053  .025  .087  .034  .033  .041
                             0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .053 .0323
                                                                                                            -.007
     11  AUG      4.4  9.4    .046  .045  .054  .040  .050  .036  .038  .049  .063  .035
                             0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .046 .0088
                                                                                                             .019
     25  AUG      4.7  9.9    .050  .050  .057  .048  .078  .067  .060  .065  .082  .088
                             0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .065 .0142
                                                                                                            -.011
     12 SEPT      5.0 11.2    .028  .054  .110  .042  .042  .045  .078  .044  .033  .057
                             0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .053 .0243
                                                                                                             .035
      4  OCT      5.2 12.0    .171  .044  .027  .036  .165  .086  .089  .061  .159  .041
                             0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .088 .0569

                                0.0 = NOT RECORDED

                                MEASUREMENTS IN GRAMS
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   STUDY AREA HORSE CK.              ARTEMISIA TRIDENTATA                    1981 REPRODUCTIVE
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  DATE     PHENOLOGY                          PRODUCTIVITY CLIPPINGS                           MEAN  STD   GROWTH
              VEG  REPR                                                                              DEV   INCREMENT
***************************************************************************************************************************


  3 JUNE     3.5  9.5     .117  .057  .118  .117  .079  .039  .083  .172 0.000 0.000
                         0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .098 .0420
                                                                                                          .084
 15 JUNE     4.2  9.5     .262  .211  .160  .185  .122  .091  .161  .181  .154  .286
                         0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .181 .0593
                                                                                                          .058
 29 JUNE     4.4  9.6     .103  .064  .205  .120  .201  .203  .551  .314  .487  .148
                         0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .240 .1633
                                                                                                         -.102
 14 JULY     4.4  9.6     .160  .131  .138  .171  .139  .083  .097  .202  .144  .112
                         0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .138 .0352
                                                                                                         -.071
 28 JULY     4.5  9.6     .069  .076  .057  .058  .058  .048  .032  .068  .110  .086
                         0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .066 .0214
                                                                                                          .123
 11  AUG     4.5  9.7     .086  .131  .128  .108  .140  .278  .068  .507  .082  .361
                         0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .189 .1458
                                                                                                          .045
 25  AUG     4.5  9.7     .201  .261  .205  .336  .259  .298  .192  .209  .218  .159
                         0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .234 .0538
                                                                                                         -.036
 12 SEPT     5.3 11.0     .090  .223  .237  .344  .180  .193  .195  .184  .194  .139
                         0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .198 .0660
                                                                                                          .060
 24 SEPT     5.3 12.5     .331  .186  .433  .211  .303  .393  .169  .144  .299  .106
                         0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .258 .1102

                          0.0 = NOT RECORDED

                          MEASUREMENTS IN GRAMS
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      STUDY AREA MESA ANT.               ARTEMSIA TRIDENTATA                         1981 REPRODUCTIVE
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    DATE      PHENOLOGY                     PRODUCTIVITY CLIPPINGS                        MEAN  STD    GROWTH
               VEG  REPR                                                                        DEV    INCREMENT
******************************************************************************************************************


     5 JUNE     3.3  9.2     .020  .023  .026  .016  .027  .031  .022  .022  .021  .017
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .023 .0046
                                                                                                         .010
    16 JUNE     3.4  9.3     .014  .011  .059  .035  .024  .020  .018  .019  .069  .058
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .033 .0214
                                                                                                         .007
    30 JUNE     3.4  9.3     .039  .030  .030  .033  .035  .048  .041  .056  .049  .037
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .040 .0087
                                                                                                        -.009
    14 JULY     4.2  9.6     .025  .019  .043  .054  .032  .024  .024  .020  .033  .029
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .030 .0109
                                                                                                         .002
    28 JULY     4.3  9.6     .049  .028  .022  .016  .042  .040  .048  .023  .022  .031
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .032 .0118
                                                                                                         .002
    11  AUG     4.7  9.7     .047  .065  .031  .026  .019  .026  .012  .070  .034  .016
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .035 .0200
                                                                                                         .002
    24  AUG     4.8  9.8     .035  .073  .023  .020  .025  .027  .061  .064  .014  .028
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .037 .0209
                                                                                                        -.007
    12 SEPT     5.0 11.3     .054  .026  .036  .018  .020  .016  .010  .053  .014  .056
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .030 .0180
                                                                                                        -.002
     4  OCT     5.3 12.2     .037  .025  .010  .037  .010  .010  .008  .013  .078  .060
                            0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .029 .0242

                              0.0 = NOT RECORDED

                              MEASUREMENTS IN GRAMS
     STUDY AREA OWL DRAW                     ARTEMISIA TRIDENTATA                          1981 REPRODUCTIVE
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   DATE      PHENOLOGY                          PRODUCTIVITY CLIPPINGS                                   MEAN  STD    GROWTH
              VEG  REPR                                                                                        DEV   INCREMENT
*****************************************************************************************************************************

  25  MAY      3.3  9.1     .056  .038  .049  .128  .052  .067  .080  .096  .077  .061
                           0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .070 .0264
                                                                                                           -.007
   8 JUNE      3.4  9.2     .122  .078  .056  .101  .049  .092  .044  .035  .043  .016
                           0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .064 .0333
                                                                                                            .042
  15 JUNE      3.4  9.3     .154  .118  .120  .078  .098  .049  .067  .077  .147  .145
                           0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .105 .0370
                                                                                                            .018
  28 JUNE      4.2  9.5     .101  .113  .124  .147  .103  .123  .101  .122  .103  .191
                           0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .123 .0280
                                                                                                           -.076
  13 JULY      4.3  9.5     .030  .049  .036  .040  .048  .046  .062  .051  .044  .058
                           0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .046 .0096
                                                                                                            .001
  27 JULY      4.3  9.5     .062  .042  .046  .049  .054  .046  .063  .043  .024  .045
                           0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .047 .0111
                                                                                                            .123
  10  AUG      4.3  9.5     .120  .387  .110  .159  .430  .099  .091  .104  .108  .095
                           0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .170 .1274
                                                                                                           -.018
  24  AUG      4.4  9.5     .202  .212  .095  .138  .137  .135  .189  .114  .148  .153
                           0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .152 .0378
                                                                                                            .002
  11 SEPT      4.8 12.7     .134  .077  .096  .212  .069  .326  .108  .235  .131  .151
                           0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .154 .0810
                                                                                                           -.009
  24 SEPT      5.2 12.8     .197  .145  .157  .088  .086  .091  .184  .082  .269  .155
                           0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .145 .0610

                             0.0 = NOT RECORDED

                             MEASUREMENTS IN GRAMS
     STUDY AREA RED WASH 2              ARTEMISIA TRIDENTATA                            1981 REPRODUCTIVE
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   DATE      PHENOLOGY                              PRODUCTIVITY CLIPPINGS                           MEAN  STD    GROWTH
               VEG  REPR                                                                                   DEV   INCREMENT
**************************************************************************************************************************

  4 JUNE      3.4   9.0    .029  .033  .036  .025  .019  .017  .025  .039  .030  .061
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .031 .0125
                                                                                                       .009
 15 JUNE      3.5   9.2    .034  .051  .030  .032  .026  .039  .037  .044  .038  .076
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .041 .0143
                                                                                                       .018
 29 JUNE      3.6   9.3    .059  .059  .031  .072  .061  .057  .037  .105  .024  .086
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .059 .0248
                                                                                                       .072
 13 JULY      4.3   9.6    .115  .292  .192  .051  .266  .080  .038  .097  .126  .055
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .131 .0899
                                                                                                      -.031
 27 JULY      4.3   9.6    .046  .139  .089  .045  .088  .218  .074  .136  .093  .072
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .100 .0521
                                                                                                       .034
 10  AUG      4.5   9.6    .129  .115  .099  .167  .082  .142  .162  .109  .214  .121
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .134 .0387
                                                                                                       .017
 25  AUG      4.8   9.9    .180  .102  .112  .209  .146  .206  .183  .130  .129  .111
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .151 .0404
                                                                                                      -.061
 13 SEPT      5.5  11.2    .045  .113  .079  .057  .101  .104  .152  .046  .124  .073
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .089 .0354
                                                                                                       .110
  3  OCT      5.7  12.0    .299  .373  .174  .070  .086  .146  .372  .236  .138  .099
                          0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  .199 .1146

                            0.0 = NOT RECORDED

                            MEASUREMENTS IN GRAMS
     STUDY AREA SHOSHONI 7                ARTEMISIA TRIDENTATA                     1981 REPRODUCTIVE
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   DATE      PHENOLOGY                           PRODUCTIVITY CLIPPINGS                            MEAN  STD    GROWTH
               VEG  REPR                                                                                DEV    INCREMENT
*******************************************************************************************************************


   3 JUNE       3.2   9.1      .043  .078  .038  .025  .047  .034  .031  .019  .025  .027
                              0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .037 .0169
                                                                                                                -.004
  18 JUNE       3.8   9.4      .020  .033  .054  .025  .015  .047  .037  .046  .018  .034
                              0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .033 .0134
                                                                                                                 .023
  30 JUNE       4.1   9.5      .044  .042  .053  .082  .037  .077  .043  .076  .043  .063
                              0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .056 .0170
                                                                                                                -.001
  13 JULY       4.3   9.6      .032  .041  .086  .077  .069  .048  .070  .033  .038  .056
                              0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .055 .0195
                                                                                                                 .015
  27 JULY       4.3   9.6      .039  .083  .076  .097  .056  .050  .062  .069  .083  .086
                              0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .070 .0182
                                                                                                                -.019
  10  AUG       4.5   9.7      .077  .050  .043  .053  .029  .072  .022  .061  .077  .032
                              0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .052 .0201
                                                                                                                 .003
  24  AUG       4.6   9.7      .032  .063  .046  .057  .072  .032  .053  .083  .075  .031
                              0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .054 .0190
                                                                                                                 .052
  11 SEPT       4.9  11.6      .069  .054  .071  .173  .139  .229  .062  .165  .062  .036
                              0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .106 .0652
                                                                                                                 .000
  24 SEPT       5.1  12.5      .058  .103  .151  .078  .138  .109  .118  .064  .101  .144
                              0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .106 .0325

                                0.0 = NOT RECORDED

                                MEASUREMENTS IN GRAMS
   STUDY AREA SWEETWATER              ARTEMISIA TRIDENTATA                       1981 REPRODUCTIVE
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  DATE      PHENOLOGY                          PRODUCTIVITY CLIPPINGS                           MEAN  STD   GROWTH
             VEG  REPR                                                                                DEV   INCREMENT
*********************************************************************************************************************

 17 JUNE     3.4  9.4    .029  .052  .028  .033  .051  .036  .066  .029  .052  .046
                        0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .042 .0130
                                                                                                         .028
  1 JULY     3.6  9.5    .109  .053  .040  .063  .044  .044  .090  .101  .082  .081
                        0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .071 .0252
                                                                                                         .010
 15 JULY     4.3  9.5    .128  .067  .180  .064  .058  .058  .117  .032  .056  .043
                        0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .080 .0463
                                                                                                        -.024
 29 JULY     4.3  9.5    .095  .041  .030  .033  .052  .056  .085  .087  .030  .051
                        0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .056 .0247
                                                                                                         .036
 12  AUG     4.5  9.6    .196  .086  .093  .070  .061  .078  .112  .087  .070  .068
                        0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .092 .0394
                                                                                                        -.008
 24  AUG     4.6  9.7    .283  .077  .035  .037  .035  .094  .056  .020  .040  .160
                        0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .084 .0812
                                                                                                         .051
 12 SEPT     4.9 11.3    .131  .153  .085  .110  .208  .160  .163  .151  .099  .088
                        0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .135 .0394
                                                                                                        -.031
  4  OCT     5.0 12.5    .121  .238  .033  .154  .163  .089  .046  .059  .037  .103
                        0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000   .104 .0661

                          0.0 = NOT RECORDED

                          MEASUREMENTS IN GRAMS
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STUDY AREA UPPER GOV. ARTEMISIA TRIDENTATA 1981 REPRODUCTIVE

DATE	PHENOLOGY VEG	PHENOLOGY REPR	PRODUCTIVITY CLIPPINGS										MEAN	STD DEV	GROWTH INCREMENT
9 JUNE	3.4	9.3	.019 0.000	.041 0.000	.045 0.000	.091 0.000	.046 0.000	.046 0.000	.058 0.000	.075 0.000	.048 0.000	.042 0.000	.051	.0198	
															-.029
17 JUNE	3.4	9.3	.016 0.000	.028 0.000	.030 0.000	.020 0.000	.022 0.000	.015 0.000	.020 0.000	.028 0.000	.018 0.000	.028 0.000	.023	.0056	
															.033
30 JUNE	3.9	9.5	.046 0.000	.053 0.000	.039 0.000	.047 0.000	.062 0.000	.024 0.000	.044 0.000	.084 0.000	.072 0.000	.081 0.000	.055	.0193	
															.002
13 JULY	4.2	9.5	.076 0.000	.071 0.000	.072 0.000	.052 0.000	.045 0.000	.052 0.000	.093 0.000	.032 0.000	.036 0.000	.038 0.000	.057	.0203	
															-.016
31 JULY	4.4	9.5	.047 0.000	.034 0.000	.052 0.000	.036 0.000	.031 0.000	.032 0.000	.041 0.000	.039 0.000	.058 0.000	.038 0.000	.041	.0089	
															.002
10 AUG	4.4	9.5	.021 0.000	.059 0.000	.086 0.000	.020 0.000	.058 0.000	.033 0.000	.037 0.000	.041 0.000	.051 0.000	.027 0.000	.043	.0206	
															.003
24 AUG	4.6	9.5	.047 0.000	.061 0.000	.036 0.000	.050 0.000	.030 0.000	.062 0.000	.040 0.000	.034 0.000	.052 0.000	.050 0.000	.046	.0110	
															-.003
11 SEPT	4.8	9.9	.031 0.000	.046 0.000	.058 0.000	.044 0.000	.031 0.000	.052 0.000	.024 0.000	.041 0.000	.028 0.000	.077 0.000	.043	.0162	
															.020
24 SEPT	5.0	9.9	.086 0.000	.048 0.000	.035 0.000	.036 0.000	.031 0.000	.028 0.000	.110 0.000	.088 0.000	.097 0.000	.071 0.000	.063	.0309	

0.0 = NOT RECORDED

MEASUREMENTS IN GRAMS

SECTION V

EXCLOSURE STUDIES (PRODUCTION, COVER, AND PRECIPITATION)

1981

Introduction

Studies of vegetation forage production from several exclosures and relic areas of the Big Horn and Wind River Basins were initiated during the 1962 field season. These studies included data from 19 livestock enclosures and one relic area. Research activities have been continued annually since that time to include 43 different exclosures throughout the western half of Wyoming. The objectives of the program are to determine:

(1) the relationship of vegetation production with phenodynamics and environmental data;

(2) the relationship of annual herbage production to area cover percentage;

(3) the influence of different treatments, the environment, and succession on vegetation changes;

(4) the influence of some range improvement practices on herbage production and cover.

Methods and Procedures

Area cover and herbage production studies on sagebrush-grass and juniper sites were conducted on transects of 20 quadrats, 1' x 1', spaced systematically along a randomly located 100' steel tape. On sites dominated by saltbush, a variation of the sampling technique, described in the 1968 results, was used to measure herbage production. Twenty 1' x 10' plots were located systematically along a randomly located 100' steel tape. Each 1' x 10' plot was subsampled for vegetative cover using 10 1' x 1' quadrats.

Area cover of all herbaceous, semi-woody, and woody species was estimated within each square foot plot. Data of shrub crown cover and basal cover of plains pricklypear, Hood's phlox, and Hooker sandwort were not combined when comparing area cover to herbaceous production since this group of plants were not clipped.

Herbage production was determined by clipping herbaceous species at ground or crown level. The clipping procedure was conducted on or near the same date as the previous year for each exclosure. Production field procedures are initiated each year shortly after July 4 on sites dominated by Gardner saltbush, which was treated as a herbaceous species. All new annual growth is clipped at that time for determination of total production. Clipping procedures for measures of grass and forb production are completed by August 22 each year with latest activities at sagebrush-grass exclosures in the Wind River Basin. Clippings were oven-dried at 70°C for 24 hours prior to weighing.

On areas where animal use had occurred prior to clipping, estimations of utilization were made by species. These estimates were made at the time each plot was clipped. The utilization values were averaged by species for the 20 plots and used to adjust production for herbage lost by utilization. Calculated production estimates given in Table III are corrected for utilization and represent total production.

As in 1968 and 1971 up through the present, an estimate of total production was derived for each site by adding the shrubby and mat forming species production to the clipped production. Shrub, mat forming, and pricklypear plant production was obtained by a modified double-sampling technique during September and October. Weight units were estimated on 20 randomly located macro quadrats, 4' x 5', subdivided into six inch squares.

Each macro quadrat was 6-12 steps apart across the study area. Shrubby species larger then six square inches, primarily big sagebrush, were estimated using the six inch square as one weight unit. Mat forming plants and shrubs smaller then six square inches were estimated by weight units of characteristic plant shape and size. Three of these weight units for each species were clipped for weight determination. Each of these units was dried in an oven at 70°C for 96 hours. The average gram weight for the three weight units, multiplied times the total number of estimated units in 20 quadrats, was converted to lbs/acre as an estimate of annual production.

At the same time clipped production data were collected during July and August, pictures of the transects were taken giving a pictorial history from year to year at each study location.

Precipitation data was recorded from metal rain gauges installed at each exclosure. The rain gauge was constructed with a diameter of 2.79 inches so that each 100 milliliters of water recorded in the gauge was equal to one inch of precipitation. Oil was added to each gauge after reading to prevent evaporation. During the winter months antifreeze is added in known amounts to prevent the gauges from freezing and breaking. Precipitation data were collected four times a year -- April 15, July 1, September 1, and October 15. In the Big Horn Basin however moisture in gauges, beginning in 1977, was read seven times during the year: April 15, June 1, July 1, August 1, September 1, October 15. BLM personnel responsible for rangeland inventory and hydrologic interrelationships urged the increased frequency of recording precipitation. A number of new locations were established and small commercial gauges installed on them. The new gauges were located primarily in western Big Horn Basin. The additions serve well to provide information from throughout the Basin.

Results 1981

The production section of the 1981 Annual Report closely follows the format of earlier reports. The new format of the data summary sheets which were revised in 1979 is again utilized. Table I gives an alphabetical listing at study sites, the county name code, the county where each site is located, and the treatments studied at each site. Table II is a list of the names of plants which occur at these sites, their lettered code name, botanical name, life form and longevity. Table III gives sampled utilization by species and estimated production values in lbs per acre for the different sites and treatments. Study areas that are not mentioned exhibited no observable utilization. Tables IV and V each include intratabular table of contents for the data summary sheets from each study site. Table IV includes those which were sampled in the early spring while Table V lists those sampled near the dates of past years in later summer. The data summary sheets follow, giving production and cover data for each treatment on all 43 sites. Forage production is given for each shrub and perennial grass species plus the categories; shrub, perennial grass, annual grass, perennial forbs, annual forbs, annual herbaceous and total production. Forage production is given in both lbs per acre and kgs per hectare. Average percent cover is given for each individual species.

Herbage production values for the study sites varied greatly from one region of the state to another. Precipitation in the southwestern section of Wyoming was much below the long term average but significant summer and fall precipitation was beneficial to grass and shrub production. In some instances such as at Cumberland Exclosure #1 and at the Farson Exclosure grass production was marginal while shrub production was much above normal.

In the Wind River Basin inclement weather with dry and cool early spring conditions severly inhibited plant development. Although excellent moisture and warm temperatures developed later in June the majority of the sites produced less than normal perennial grass production and only moderate shrub production.

Spring season moisture during 1981 in the Big Horn Basin was much above normal at almost all locations. This was followed with moderate summer temperatures and quite frequent rain showers which resulted in considerably greater amounts of perennial grass herbage production than during the previous year.

Table I. An alphabetical listing of study areas, the county name code, the county location and the treatments studied at each area.

County Name Code	Study Areas	County	Treatment
2017	Big Trails G.R.I. Exc.	Washakie	Inside Spray Outside Native
1002	Boysen Reservoir Exc.	Fremont	Inside Native Outside Native
2007	Bud Kimball Exc.	Washakie	Inside Native Outside Native Inside Spray Outside Spray
2002	Buffalo Creek Exc.	Washakie	Inside Native Outside Native
2003	Burned Wagon Exc.	Washakie	Inside Native Outside Native
0403	Cedar Mountain Exc.	Sweetwater	Inside Native Outside Native
1501	Cochran Exc.	Hot Springs	Inside Native Outside Native Outside Spray
1901	Cumberland #1 Exc.	Unita	Inside Native Outside Native Inside Spray Outside Spray
1201	Cumberland #2 Exc.	Lincoln	Inside Native Outside Native Inside Spray Outside Spray
1202	Cumberland #2 Exc.	Linclon	Inside Native Outside Native Inside Spray Outside Spray
1901	Cumberland #4 Exc.	Uinta	Inside Native Outside Native
2004	Demer Exc.	Washakie	Inside Native Outside Native
2005	Dutch Nick Exc.	Washakie	Inside Native Outside Native
0404	Farson Exc.	Sweetwater	Inside Native Outside Native
1007	Granite Mountain Exc.	Fremont	Inside Native Outside Native Inside Spray Outside Spray
0901	Halogeton Pasture #1 Exc.	Big Horn	Inside Native
0905	Halogeton Pasture #2 Exc.	Big Horn	Inside Native
0903	Halogeton Pasture #3 Exc.	Big Horn	Inside Native
0910	Halogeton Pasture #6	Big Horn	Outside Graze
0911	Halogeton Pasture #7a	Big Horn	Outside Graze

Table I. (Continued):

County Name Code	Study Areas	County	Treatment
0913	Horse Creek Exc.	Big Horn	Inside AGSM Outside AGSM Inside AGSP Outside AGSP Inside ARNO Outside ARNO
0914	Kane Deer Exc.	Big Horn	Inside Native Outside Native Inside Spray Outside Spray
0921	Kane Deer G.R.I. Exc.	Big Horn	Inside Spray Outside Native
1502	Kirby Creek Exc.	Hot Springs	Inside Native Outside Native
1001	Lander Ant Exc.	Fremont	Inside Native Outside Native
1003	Lower Gov't Draw Exc.	Fremont	Inside Native Outside Native Inside Spray Outside Spray
1004	McGraw Flat Exc.	Fremont	Inside Native Outside Native
0920	Medicine Lodge G.R.I. Exc.	Big Horn	Inside Spray Outside Native
2301	Mesa Antelope Exc.	Sublette	Inside Native Outside Native
1503	North Butte Relic Area	Hot Springs	Relic
0104	Owl Draw Exc.	Natrona	Inside ARNO Outside ARNO Inside ARTR Outside ARTR
0406	Red Wash #2 Exc.	Sweetwater	Inside AGSM Outside AGSM Inside AGSP Outside AGSP
1504	Round Top Relic Area	Hot Springs	Relic
1505	Sand Gulch	Hot Springs	Inside Native Outside Native
1009	Shoshone Ant #2 Exc.	Fremont	Inside Northeast Inside Northwest Inside Southeast Inside Southwest Outside Native
1011	Shoshone Ant #4 Exc.	Fremont	Inside Northeast Inside Northwest Inside Southeast Inside Southwest Outside Native

Table I. (Continued):

County Name Code	Study Areas	County	Treatment
1013	Shoshone Ant #7 Exc.	Fremont	Inside Northeast
			Inside Northwest
			Inside Southeast
			Inside Southwest
			Outside Native
1014	Shoshone Ant #8 Exc.	Fremont	Inside Northeast
			Inside Northwest
			Inside Southeast
			Inside Southwest
			Outside Native
1015	Shoshone Ant #9 Exc.	Fremont	Inside Northeast
			Inside Northwest
			Inside Southeast
			Inside Southwest
			Outside Native
1017	Shoshone Ant #11 Exc.	Fremont	Inside Northeast
			Inside Northwest
			Inside Southeast
			Inside Southwest
			Outside Native
2009	Smilo Exc.	Washakie	Inside Native
			Outside Native
			Inside Spray
			Outside Spray
1005	Sweetwater Exc.	Fremont	Inside ARNO
			Outside ARNO
			Inside ARTR
			Outside ARTR
2010	Two Mile Hill Exc.	Washakie	Inside Native
			Outside Native
1006	Upper Gov't Draw Exc.	Fremont	Inside Native
			Outside Native
			Inside Spray
			Outside Spray
2006	West Pasture Exc.	Washakie	Inside Native
			Outside Native

Table II. List of plant names which occurred in production study areas.

Code	Genus-Species	Common Name	Life Form	Longevity
ACLA	Achillea lanulosa	Western yarrow	Forb	Perennial
AGGL	Agoseris glauca	Pale agoseris	Forb	Perennial
AGCR	Agropyron cristatum	Crested wheatgrass	Grass	Perennial
AGSM	Agropyron smithii	Western wheatgrass	Grass	Perennial
AGSP	Agropyron spicatum	Bluebunch wheatgrass	Grass	Perennial
ALCE	Allium cernuum	Nodding onion	Forb	Perennial
ALTE	Allium textile	Prairie onion	Forb	Perennial
ALL	Allium spp.	Onion	Forb	Perennial
ANOC	Androsace occidentalis	Western rockjasmine	Forb	Annual
ANDI	Antennaria dimorpha	Low pussytoes	Mat-form	Perennial
ANRO	Antennaria rosea	Rose pussytoes	Mat-form	Perennial
ARHO[2]	Arabis holboellii	Holboell rockcress	Forb	Perennial
ARLI	Arabis lignifera	Woody rockcress	Forb	Perennial
ARCO	Arenaria congesta	Ballhead sandwort	Forb	Perennial
ARHO	Arenaria hookeri	Hooker sandwort	Mat-form	Perennial
ARFE	Aristida fendleriana	Fendler threeawn	Grass	Perennial
ARFR	Artemisia frigida	Fringed sagewort	Half-shrub	Perennial
ARLO	Artemisia longiloba	Alkali sagebrush	Shrub	Perennial
ARNO	Artemisia nova	Black sagebrush	Shrub	Perennial
ARPE	Artemisia pedatifida	Birdsfoot sagewort	Half-shrub	Perennial
ARSP	Artemisia spinescens	Bud sagewort	Half-shrub	Perennial
ARTR	Artemisia tridentata	Big sagebrush	Shrub	Perennial
ASDI	Astragalus diversifolius	Meadow milkvetch	Forb	Perennial
ASDR	Astragalus drummondii	Drummond milkvetch	Forb	Perennial
ASMI	Astragalus miser	Timber milkvetch	Forb	Perennial
ASMI[2]	Astragalus missouriensis	Missouri milkvetch	Forb	Perennia
ASPU	Astragalus purshii	Pursh loco	Forb	Perennia
ASSP	Astragalus spatulatus	Tufted milkvetch	Mat-form	Perennia
AST	Astragalus spp.	Milkvetch	Forb	Perennia
ATAR	Atriplex argentea	Silverscale saltbush	Forb	Annual
ATCA	Atriplex canescens	Fourwing saltbush	Shrub	Perennia
ATCO	Atriplex confertifolia	Shadscale	Shrub	Perennia
ATGA	Atriplex gardneri	Gardner saltbush	Half-shrub	Perennia
BASA	Balsamorhiza sagittata	Arrowleaf balsamroot	Forb	Perennia
BOGR	Bouteloua gracilis	Blue grama	Grass	Perennia
BRJA	Bromus japonicus	Japanese chess	Grass	Annual
BRTE	Bromus tectorum	Cheatgrass	Grass	Annual
CAMO	Calamagrostis montanensis	Plains reedgrass	Grass	Perennia
CANU	Calochortus nuttallii	Sego mariposalily	Forb	Perennia
CAMI	Camelina microcarpa	Littlepod falseflax	Forb	Annual
CAEL	Carex eleocharis	Needleleaf sedge	Sedge	Perennia
CAFI	Carex filifolia	Threadleaf sedge	Sedge	Perennia
CACH	Castilleja chromosa	Desert Indian paintbrush	Forb	Perennia
CAAN	Castilleja angustifolia	Narrowleaf Ind.paintbrush	Forb	Perennia
CALI	Castilleja linariaefolia	Wyoming Ind. paintbrush	Forb	Perennia
CEAR	Cerastium arvense	Field chickweed	Forb	Annual
CELA	Ceratoides lanata	Winterfat	Half-shrub	Perennia
CHDO	Chaenactis douglasii	Douglas dustymaiden	Forb	Perennia
CHAL	Chenopodium album	Lambsquarter goosefoot	Forb	Perennia

Table II. (Continued):

Code	Genus-Species	Common Name	Life Form	Longevity
CHDE	Chenopodium dessicatum	Desert goosefoot	Forb	Annual
CHLA	Chenopodium lanceolatum	Lanceleaf goosefoot	Forb	Annual
CHLE	Chenpodium leptophyllum	Narrowleaf goosefoot	Forb	Annual
CHE	Chenopodium spp.	Goosefoot	Forb	Annual
CHNA	Chrysothamnus nauseosus	Rubber rabbitbrush	Shrub	Perennial
CHVI	Chrysothamnus viscidiflorus	Douglas rabbitbrush	Shrub	Perennial
COPA[2]	Collinsia parviflora	Blue-eyed Mary	Forb	Annual
COPA	Comandra pallida	Pale bastardtoadflax	Forb	Perennial
CORA	Cordylanthus ramosus	Bushy birdbeak	Forb	Annual
CRAC	Crepis acuminata	Tapertip hawksbeard	Forb	Perennial
CRMO	Crepis modocensis	Yellowstone hawksbeard	Forb	Perennial
CRBR	Cryptantha bradburiana	Miners candle	Forb	Perennial
CYMO	Cymopterus montanus	Mountain springparsley	Forb	Perennial
DEGE	Delphinium geyeri	Plains larkspur	Forb	Perennial
DEPI	Descurainia pinnata	Pinnate tansymustard	Forb	Annual
DRA	Draba spp.	Draba	Forb	Perennial
ELCI	Elymus cinereus	Basin wildrye	Grass	Perennial
ERCA	Erigeron canadensis	Horseweed fleabane	Forb	Annual
ERCO	Erigeron compositus	Fernleaf fleabane	Forb	Perennial
EROC	Erigeron ochroleucus	Creamy fleabane	Forb	Perennial
ERPU	Erigeron pumilus	Low fleabane	Forb	Perennial
ERI	Erigeron spp.	Fleabane	Forb	Perennial
ERCA[2]	Eriogonum caespitosum	Mat wildbuckwheat	Mat-form	Perennial
ERBR	Eriogonum brevicaule	Shortstem wildbuckwheat	Half-shrub	Perennial
ERCE	Eriogonum cernuum	Nodding wildbuckwheat	Forb	Annual
ERFL	Eriogonum flavum	Yellow wildbuckwheat	Half-shrub	Perennial
ERMI	Eriogonum microthecum	Slenderbrush wildbkwht	Forb	Perennial
EROV	Eriogonum ovalifolium	Cushion wildbuckwheat	Mat-form	Perennial
ERSU	Eriogonum subalpinum	Subalpine wildbuckwheat	Mat-form	Perennial
ERUM	Eriogonum umbellatum	Sulfur wildbuckwheat	Mat-form	Perennial
ERI[2]	Eriogonum spp.	Eriogonum	Mat-form	
ERAS	Erysimum asperum	Plains wallflower	Forb	Perennial
EUSE	Euphorbia serpyllifolia	Thyme leaf spurge	Forb	Annual
FEID	Festuca idahoensis	Idaho fescue	Grass	Perennial
GACO	Gaura coccinea	Scarlet gaura	Forb	Perennial
GICO	Gilia congesta	Ballhead gilia	Forb	Perennial
GIIN	Gilia insignis	Woody gilia	Forb	Perennial
GILE	Gilia leptomeria	Minute flowering gilia	Forb	Annual
GIPU	Gilia pumila	Dwarf gilia	Forb	Annual
GISP	Gilia spicata	Spike gilia	Forb	Perennial
GYPA	Gymnosteris parvula	Leafless false phlox	Forb	Annual
HAGL	Halogeton glomeratus	Halogeton	Forb	Annual
HAAC	Haplopappus acaulis	Stemless goldenweed	Mat-form	Perennial
HEAN	Helianthus annuus	Annual sunflower	Forb	Annual
HOPU	Hordeum pusillum	Little barley	Grass	Annual
JUOS	Juniperus osteosperma	Utah juniper	Shrub-Tree	Perennial
JUSC	Juniperus scopulorum	Rocky Mountain juniper	Shrub-Tree	Perennial
KOAM	Kochia americana	Greenmolly summercypress	Half-shrub	Perennial

Table II. (Continued):

Code	Genus-Species	Common Name	Life Form	Longevit
KOCR	Koeleria cristata	Prairie junegrass	Grass	Perennia
LASE	Lactuca serriola	Prickly lettuce	Forb	Perennia
LAC	Lactuca spp.	Lettuce	Forb	Annual
LARE	Lappula redowskii	Bluebur stickseed	Forb	Annual
LATE	Lappula texana	Texan stickseed	Forb	Annual
LEDE	Lepidium densiflorum	Prairie pepperweed	Forb	Annual
LEPE	Lepidium perfoliatum	Clasping pepperweed	Forb	Annual
LEPU	Leptodactylon pungens	Granite pricklygilia	Half-shrub	Perennia
LEAL	Lesquerella alpina	Alkaline bladderpod	Forb	Perennia
LELU	Lesquerella ludoviciana	Foothill bladderpod	Forb	Perennia
LERE	Lewisia rediviva	Bitterroot lewisia	Forb	Perennia
LILE	Linum lewisii	Lewis flax	Forb	Perennia
LOOR	Lomatium orientale	Eastern lomatium	Forb	Perennia
LOSI	Lomatium simplex	Narrowleaf lomatium	Forb	Perennia
LOM	Lomatium spp.	Lomatium	Forb	Perennia
LUPU	Lupinus pusillus	Rusty lupine	Forb	Annual
MACA	Machaeranthera canescens	Hoary aster	Forb	Perennia
MAGL	Machaeranthera glabriuscula	Alkaline woodyaster	Half-shrub	Perennia
MAGR	Machaeranthera grindeloides	Toothleaf woodyaster	Half-shrub	Perennia
MATA	Machaeranthera tanacetifolia	Tansyleaf aster	Forb	Annual
MAVI	Mamillaria vivipara	Purple ballcactus	Succulent	Perennia
MEAL	Mentzelia albicaulis	Whitestem mentzelia	Forb	Annual
MECI	Mertensia ciliata	Mountain bluebells	Forb	Perennia
MELO	Mertensia longiflora	Small bluebells	Forb	Perennia
MIGR	Microsteris gracilis	Pink microsteris	Forb	Annual
MONU	Monolepis nuttalliana	Nuttall monolepis	Forb	Annual
MUDI	Musineon divaricatum	Leafy musineon	Forb	Perennia
OETR	Oenothera trichocalyx	Pale evening primrose	Forb	Annual
OPPO	Opuntia polyacantha	Plains pricklypear	Succulent	Perennia
ORFA	Orobanche fasciculata	Tufted broomrape	Sapprophyte	Perennia
ORHY	Oryzopsis hymenoides	Indian ricegrass	Grass	Perennia
OXSE	Oxytropis sericea	Silky pointloco	Forb	Perennia
PECL	Penstemon cleburnei	Cleburn penstemon	Forb	Perennia
PEFR	Penstemon fremonti	Fremont penstemon	Forb	Perennia
PELA	Penstemon laricifolius	Larchleaf penstemon	Forb	Perennia
PEN	Penstemon spp.	Penstemon	Forb	Perennia
PHHO	Phlox hoodii	Hood's phlox	Mat-form	Perennia
PHLO	Phlox longifolia	Longleaf phlox	Forb	Perennia
PHMU	Phlox multiflora	Flowery phlox	Mat-form	Perennia
PHAU	Physaria australis	Southern twinpod	Forb	Perennia
PLPA	Plantago patagonica	Wooly Indianwheat	Forb	Annual
POAM	Poa ampla	Big bluegrass	Grass	Perennia
POFE	Poa fendleriana	Muttongrass	Grass	Perennia
POSE	Poa secunda	Sandberg bluegrass	Grass	Perennia
POAV	Polygonum aviculare	Prostrate knotweed	Forb	Annual
POSA	Polygonum sawatchense	Sawatch knotweed	Forb	Annual
PSTE	Psoralea tenuiflora	Slimflower scurfpea	Forb	Perennia

Table II. (Continued):

Code	Genus-Species	Common Name	Life Form	Longevity
PTTE	Pteryxia terebinthina	Fernyparsley	Forb	Perennial
RHTR	Rhus trilobata	Skunkbush sumac	Shrub	Perennial
SAIB	Salsola iberica	Russian thistle	Forb	Annual
SAVE	Sarcobatus vermiculatus	Greasewood	Shrub	Perennial
SECA	Senecio canus	Woolly groundsel	Forb	Perennial
SELA	Sedum lanceolatum	Stonecrop	Succulent	Perennial
SEST	Sedum stenopetalum	Lanceleaf wornleaf	Succulent	Perennial
SIAL	Sisymbrium altissimum	Tumbling hedgemustard	Forb	Annual
SILI	Sisymbrium linifolium	Longleaf hedgemustard	Forb	Perennial
SPCO	Sphaeralcea coccinea	Scarlet globemallow	Forb	Perennial
SPCR	Sporobolus cryptandrus	Sand dropseed	Grass	Perennial
STCO	Stipa comata	Needleandthread	Grass	Perennial
STVI	Stipa viridula	Green needlegrass	Grass	Perennial
SYOC	Symphoricarpos occidentalis	Western snowberry	Shrub	Perennial
SYM	Symphoricarpos spp.	Snowberry	Shrub	Perennial
TAOF	Taraxacum officinale	Common dandelion	Forb	Perennial
TECA	Tetradymia canescens	Gray horsebrush	Shrub	Perennial
TESP	Tetradymia spinosa	Cottonthorn horsebrush	Shrub	Perennial
TRDU	Tragopogon dubius	Yellow salsify	Forb	Biennial
TRGY	Trifolium gymnocarpon	Hollyleaf clover	Forb	Perennial
TRI	Trifolium spp.	Clover	Forb	Perennial
VIAM	Vicia americana	American vetch	Forb	Perennial
VINU	Viola nuttallii	Nuttall violet	Forb	Perennial
VUOC	Vulpia octoflora	Common six-weeks grass	Grass	Annual
XASA	Xanthocephalum sarothrae	Broom snakeweed	Half-shrub	Perennial
ZIVE	Zigadenus venenosus	Meadow deathcamas	Forb	Perennial

Table III. Utilization occurring prior to clipping.

Exclosure	Treatment	Species	% Utilization	Production lbs/acre
Bud Kimball	Out Native	AGSM	2.0	1.04
		POSE	3.5	.71
	Out Spray	AGSM	17.0	18.30
		POSE	.5	.19
Cedar Mountain	Out Native	AGSP	4.5	1.04
Cochran	Out Native	AGSM	1.5	2.45
Cumberland 1	Out Spray	AGSM	17.10	22.45
		POSE	55.0	1.79
Cumberland 2	Out Native	POFE	1.25	1.15
	Out Spray	AGSM	3.0	1.69
		POFE	27.1	7.02
		POSE	40.7	20.3
Cumberland 3	Out Native	POSE	13.1	19.01
Dutch Nick	In Native	ORHY	3.4	3.18
Granite Mountain	Out Native	POFE	10.0	10.28
		POSE	8.0	2.88
	Out Spray	AGSM	.5	.28
		POFE	15.5	9.90
		POSE	3.3	.71
Halogeton Exc. #1		SIHY	.5	.07
Horse Creek	Out AGSP	AGSP	9.8	3.53
	Out AGSM	AGSM	13.2	15.46
Lower Government	Out Native	AGSM	7.5	2.57
		KOCR	1.0	.02
		POSE	.5	.09
		STCO	5.8	1.31
	Out Spray	AGSM	8.2	7.82
		POSE	8.8	2.03
		STCO	7.5	3.68
McGraw Flat	Out Native	POFE	20.5	19.05
Medicine Lodge	Out Native	POFE	2.0	.37
Mesa Antelope	Out Native	AGSM	11.2	5.72

Table III. (Continued):

Exclosure	Treatment	Species	% Utilization	Production lbs/acre
Owl Draw	Out ARNO	AGSM	7.0	4.10
		KOCR	.6	.05
		POSE	2.9	.36
	Out ARTR	AGSM	4.2	1.87
		KOCR	12.0	2.59
		POSE	22.0	15.35
Shoshoni 7	Out Native	AGSM	2.0	.30
Shoshoni 8	In SW	AGSM	.75	.09
		STCO	.5	.94
Two Mile Hill	In Native	POSE	8.0	7.14
	Out Native	AGSM	6.87	2.90
		ORHY	15.5	.19
		POSE	28.8	.14
		SIHY	1.5	.04
West Pasture	In Native	ORHY	.85	1.14
		POSE	.66	.10
	Out Native	POSE	1.4	.04

Table IV. Vegetation cover data, precipitation and herbage production data alphabetically by exclosure for the 1981 early spring sampling date.

Exclosure	Treatment	Page
Bud Kimball	In Native	148
Cedar Mountain	In Native	149
Cumberland #3	In Native	150
Demer	In Native	151
Farson	In Native	152
Horse Creek	In AGSP	153
Horse Creek	In ARNO	154
Horse Creek	In ARTR	155
Mesa Antelope	In Native	156
Owl Draw	In ARNO	157
Owl Draw	In ARTR	158
Red Wash #2	In Native	159
Shoshoni #7	In Native	160
Sweetwater	In ARNO	161
Sweetwater	In ARTR	162
Upper Government	In Native	163

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2007.    BUDKIMBALL      2 JUNE       1981      IN NATIVE

                         NUMBER OF PLOTS = 20
                         PLOT SIZE 1X1
ANT     PLANT     AVE.   1X1      TOTAL     AVE.     WGT./    LBS     KGS
DE      NAME      PER-   ABS.     WGT.      WGT.     UNIT     PER     PER
                  CENT   PLOT     GMS/20    /PLOT    COVER    ACRE    HA.
                  COVER  FREQ.    SQ.FT.    OCCUR-   AREA
                  AREA   BASE               RENCES
                         20
***********************************************************************
 6   SHRUBS
       ARTR      16.33     16.
       PHHO        .17      3.
       LEPU        .11      2.
       OPPO       1.20      2.
 3   PER GRASS
       AGSM        .23     15.     5.03      .25     1.08    24.15    27.07
       POSE        .47     18.     3.42      .17      .36    16.42    18.41
       SIHY        .14      3.     1.99      .10      .71     9.55    10.71
                  TOTAL PERENNIAL GRASS PRODUCTION =           50.12    56.18
 2   PER FORBS
       CACH        .15      1.
       ERPU        .71      7.
       LERE        .02      2.
            PERENNIAL FORBS =      3.42      .17      .20    16.42    18.41
 4   ANN FORBS
       DEPI        .03      2.
       LEPE        .02      4.
       PLPA        .01      1.
               ANNUAL FORBS =       .20      .01      .21      .96     1.08

         ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION =            67.50    75.67


  PRECIPITATION DATA                  PRODUCTION ESTIMATES OF SHRUBS
  RAIN GAUGE                          AND WOODY MAT FORM PLANTS
***********************              **********************************
 OCT 15 TO APR 15 =  2.04              ARTR              354.07   396.92
 APR 15 TO JULY 1 =  4.00              PHHO               14.95    16.76
 JULY 1 TO SEPT 1 =  1.05              OPPO               19.82    22.22
 SEPT 1 TO OCT 15 =  1.25
 SEASON TOTAL     =  8.34
 LONG TERM AVERAGE=  9.25

                      TOTAL SHRUB PRODUCTION =  388.84   435.89


                            TOTAL PRODUCTION =  456.34   511.56
                            *************************************
```

```
403.   CEDAR MTN     27 MAY        1981     IN NATIVE

                   NUMBER OF PLOTS = 20
                      PLOT SIZE 1X1
PLANT    PLANT   AVE.    1X1     TOTAL    AVE.    WGT./   LBS     KGS
CODE     NAME    PER-    ABS.    WGT.     WGT.    UNIT    PER     PER
                 CENT    PLOT    GMS/20   /PLOT   COVER   ACRE    HA.
                 COVER   FREQ.   SQ.FT.   OCCUR-  AREA
                 AREA    BASE             RENCES
                         20
*************************************************************************
   6   SHRUBS
          ARTR    12.30      9.
          ATCO      .11      2.
          CHVI      .10      1.
          KOAM      .10      2.
          TENU      .59      4.
   3   PER GRASS
          AGSP     1.50      7.     8.50     .43     .28   40.81    45.75
          POSE      .69      7.     3.59     .18     .26   17.23    19.31
          SIHY      .28      4.     3.01     .15     .55   14.45    16.20
                 TOTAL PERENNIAL GRASS PRODUCTION =        72.49    81.26
   2   PER FORBS
          ARHO2     .01      1.
          PHLO      .22     13.
          SILI      .02      3.
              PERENNIAL FORBS =     1.84     .09     .37    8.83     9.90

        ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION =          81.32    91.16


    PRECIPITATION DATA               PRODUCTION ESTIMATES OF SHRUBS
    RAIN GAUGE                       AND WOODY MAT FORM PLANTS
    **********************           *******************************
   OCT 15 TO APR 15 =  3.29            ARTR             324.86   364.17
   APR 15 TO JULY 1 =  2.87            ATCO              25.30    28.37
   JULY 1 TO SEPT 1 =   .40            ATGA               1.72     1.93
   SEPT 1 TO OCT 15 =  1.61            CHVI              21.25    23.82
   SEASON TOTAL     =  8.17            KOAM               2.30     2.58
   LONG TERM AVERAGE=  9.25            OPPO               2.11     2.36
                                       PHHO               5.55     6.22
                                       TENU               8.48     9.50

                        TOTAL SHRUB PRODUCTION =  391.57   438.95


                             TOTAL PRODUCTION =  472.89   530.11
                             ***********************************
```

```
02.    CUMBER 3      28    MAY      1981      IN NATIVE

                 NUMBER OF PLOTS = 20
                   PLOT SIZE 1X1
IT  PLANT   AVE.    1X1    TOTAL   AVE.   WGT./   LBS      KGS
E   NAME    PER-    ABS.   WGT.    WGT.   UNIT    PER      PER
            CENT    PLOT   GMS/20  /PLOT  COVER   ACRE     HA.
            COVER   FREQ.  SQ.FT.  OCCUR- AREA
            AREA    BASE           RENCES
                    20
******************************************************************
  SHRUBS
    ANDI        .04     2.
    ARTR      16.96    11.
    CHVI       3.79    15.
    ERMI        .04     3.
    PHHO        .15     8.
  PER GRASS
    AGSM        .50    15.   13.43    .67   1.34   64.48    72.28
    AGSP        .34     6.    2.72    .14    .40   13.06    14.64
    POFE       1.41    10.   35.32   1.77   1.26  169.59   190.11
    POSE       1.47    12.   26.43   1.32    .90  126.90   142.25
    SIHY        .23     2.    3.17    .16    .70   15.22    17.06
        TOTAL PERENNIAL GRASS PRODUCTION =        389.25   436.35
  PER FORBS
    AGGL        .09     5.
    ASDI        .01     1.
    ASMI        .45     2.
    PHLO        .39    14.
    CYMO        .21    10.
    SILI        .02     1.
    TRGY        .62    13.
         PERENNIAL FORBS =   20.86   1.04    .59  100.16   112.28
  ANN FORBS
    DEPI        .01     1.
    UNKN        .03     4.
            ANNUAL FORBS =     .21    .01    .35    1.00     1.12

      ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION =    490.41   549.75


 PRECIPITATION DATA                PRODUCTION ESTIMATES OF SHRUBS
 RAIN GAUGE                        AND WOODY MAT FORM PLANTS
*************************          ******************************
OCT 15 TO APR 15 =   3.00            ARTR               225.28   252.54
APR 15 TO JULY 1 =   3.00            CHVI                15.87    17.79
JULY 1 TO SEPT 1 =   1.00            ERMI                 1.71     1.91
SEPT 1 TO OCT 15 =    .70            PHHO                17.82    19.98
SEASON TOTAL     =   7.70            SYOC                  .52      .59
LONG TERM AVERAGE=  10.87            TECA                  .33      .37

                    TOTAL SHRUB PRODUCTION =         261.54   293.18



                        TOTAL PRODUCTION =           751.95   842.93
                        ****************************************
 2004.    DEMER         20 JUNE          1981       IN NATIVE

                       NUMBER OF PLOTS = 20
                         PLOT SIZE 1X1
PLANT    PLANT    AVE.   1X1     TOTAL    AVE.    WGT./   LBS    KGS
CODE     NAME     PER-   ABS.    WGT.     WGT.    UNIT    PER    PER
                  CENT   PLOT    GMS/20   /PLOT   COVER   ACRE   HA.
                  COVER  FREQ.   SQ.FT.   OCCUR-  AREA
                  AREA   BASE             RENCES
                         20
**************************************************************************
   6  SHRUBS
        ARTR      9.98     14.
   3  PER GRASS
        AGSM       .58     14.  12.12      .61    1.05   58.19    65.23
        AGSP       .17      2.  10.40      .52    3.06   49.93    55.97
        BOGR       .07      4.    .23      .01     .18    1.10     1.23
        POSE       .58     14.   6.63      .33     .58   31.83    35.68
        SIHY       .07      3.    .78      .04     .56    3.74     4.19
                  TOTAL PERENNIAL GRASS PRODUCTION = 144.79   162.31
   2  PER FORBS
        CYMO       .03      1.
             PERENNIAL FORBS =    .31      .02     .52    1.48     1.66
   5  ANN GRASS
        BRTE       .04      6.
        VUOC       .01      3.
              ANNUAL GRASSES =    .84      .04     .80    4.03     4.52
   4  ANN FORBS
        DEPI       .02      4.
        LEDE       .02      5.
        PLPA       .01      1.
        UNKN       .00      1.
                ANNUAL FORBS =    .35      .02     .31    1.68     1.88

          ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 151.98   170.37


     PRECIPITATION DATA                  PRODUCTION ESTIMATES OF SHRUBS
     RAIN GAUGE                          AND WOODY MAT FORM PLANTS
   **********************                ********************************
    OCT 15 TO APR 15 = 3.82                ARTR              228.77  256.45
    APR 15 TO JULY 1 = 4.15                OPPO               35.68   40.00
    JULY 1 TO SEPT 1 = 1.05
    SEPT 1 TO OCT 15 = 1.05
    SEASON TOTAL     =10.07
    LONG TERM AVERAGE= 8.54

                              TOTAL SHRUB PRODUCTION =  264.45  296.45


                                    TOTAL PRODUCTION =  416.43  466.82
                                    ******************************
```

```
404.   FARSON        28 MAY         1981       IN NATIVE

                     NUMBER OF PLOTS = 20
                       PLOT SIZE 1X1
NT     PLANT    AVE.   1X1     TOTAL    AVE.     WGT./    LBS     KGS
E      NAME     PER-   ABS.    WGT.     WGT.     UNIT     PER     PER
                CENT   PLOT    GMS/20   /PLOT    COVER    ACRE    HA.
                COVER  FREQ.   SQ.FT.   OCCUR-   AREA
                AREA   BASE             RENCES
                       20
*************************************************************************
6  SHRUBS
     ARTR       21.25    12.
     CHVI         .02     1.
     PHHO        1.05    10.
     OPPO         .34     6.
3  PER GRASS
     AGSM         .43    18.     3.62     .18      .42   17.38    19.48
               TOTAL PERENNIAL GRASS PRODUCTION =        17.38    19.48
2  PER FORBS
     ARHO2        .02     1.
     PHLO         .01     1.
           PERENNIAL FORBS =      .16      .01      .30     .86      .96
4  ANN FORBS
     UNKN         .08     1.
              ANNUAL FORBS =      .64      .03      .43    3.07     3.44

     ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION =            21.31    23.89



 PRECIPITATION DATA                  PRODUCTION ESTIMATES OF SHRUBS
 RAIN GAUGE                          AND WOODY MAT FORM PLANTS
*********************                ***********************************
 OCT 15 TO APR 15 =   2.43             ARTR             230.63   258.54
 APR 15 TO JULY 1 =   2.50             ATCO                .49      .55
 JULY 1 TO SEPT 1 =    .79             CELA               4.02     4.50
 SEPT 1 TO OCT 15 =   1.29             CHVI               3.64     4.08
 SEASON TOTAL     =   7.01             GRSP               1.30     1.45
 LONG TERM AVERAGE=   6.62             OPPO               2.13     2.38
                                       PHHO              12.31    13.79

                          TOTAL SHRUB PRODUCTION =      254.50   285.30


                               TOTAL PRODUCTION =       275.81   309.19
                               **************************************
```

```
913.    HORS CREK     3 JUNE          1981       IN AGSP

                            NUMBER OF PLOTS = 20
                               PLOT SIZE 1X1
PLANT    PLANT    AVE.     1X1     TOTAL    AVE.    WGT./    LBS     KGS
CODE     NAME     PER-     ABS.    WGT.     WGT.    UNIT     PER     PER
                  CENT     PLOT    GMS/20   /PLOT   COVER    ACRE    HA.
                  COVER    FREQ.   SQ.FT.   OCCUR-  AREA
                  AREA     BASE             RENCES
                           20
***************************************************************************
   6   SHRUBS
          ARTR       4.80      3.
          CELA        .15      1.
          OPPO        .08      1.
          PHHO        .09      3.
          XASA        .05      2.
   3   PER GRASS
          AGSM        .03      2.     .72     .04    1.20    3.45    3.87
          AGSP       2.14     20.  123.56    6.18    2.89  593.29  665.08
          POSE        .08      2.     .59     .03     .39    2.83    3.17
                  TOTAL PERENNIAL GRASS PRODUCTION =       599.57  672.12
   2   PER FORBS
          CANU        .02      1.
          CHDO        .01      1.
          SPCO        .10      2.
          TRDU        .03      1.
              PERENNIAL FORBS =   1.73     .09     .58    8.30    9.30

              ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION =     607.87  681.42


     PRECIPITATION DATA                 PRODUCTION ESTIMATES OF SHRUBS
     RAIN GAUGE                         AND WOODY MAT FORM PLANTS
     **********************             ********************************
     OCT 15 TO APR 15 =   3.08            ARTR                79.23   88.82
     APR 15 TO JULY 1 =   5.65            CELA                  .32     .36
     JULY 1 TO SEPT 1 =   1.84            HAAC                  .29     .32
     SEPT 1 TO OCT 15 =   1.75            OPPO                14.98   16.79
     SEASON TOTAL     =  12.32            PHHO                 3.11    3.49
     LONG TERM AVERAGE=  11.11            XASA                 6.47    7.26

                              TOTAL SHRUB PRODUCTION =  104.40   117.03


                                   TOTAL PRODUCTION =  712.27   798.45
                                   ******************************
```

```
913.    HORS CREK     3 JUNE      1981      IN ARNO

                   NUMBER OF PLOTS = 20
                        PLOT SIZE 1X1
ANT     PLANT    AVE.   1X1     TOTAL   AVE.     WGT./    LBS     KGS
ODE     NAME     PER-   ABS.    WGT.    WGT.     UNIT     PER     PER
                 CENT   PLOT    GMS/20  /PLOT    COVER    ACRE    HA.
                 COVER  FREQ.   SQ.FT.  OCCUR-   AREA
                 AREA   BASE            RENCES
                        20
**************************************************************************
 6   SHRUBS
       ARNO        6.35     8.
       LEPU         .05     2.
       OPPO         .05     1.
       PHHO         .10     2.
       XASA         .10     2.
 3   PER GRASS
       AGSM         .01     2.     .47      .02     2.35    2.25     2.52
       AGSP        1.04    13.   52.86     2.64     2.54  253.81   284.52
       POSE         .13     2.    1.89      .09      .76    9.07    10.17
                 TOTAL PERENNIAL GRASS PRODUCTION = 265.13  297.21
 2   PER FORBS
       CANU         .02     1.
       COPA         .05     3.
       CRBR         .12     5.
       SPCO         .21     5.
       UNKN         .02     1.
            PERENNIAL FORBS =    3.36      .17       .43    16.13    18.08

         ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 281.26  315.29


   PRECIPITATION DATA                PRODUCTION ESTIMATES OF SHRUBS
   RAIN GAUGE                        AND WOODY MAT FORM PLANTS
**********************               ******************************
  OCT 15 TO APR 15 =  3.08              ARTR            79.23    88.82
  APR 15 TO JULY 1 =  5.65              CELA              .32      .36
  JULY 1 TO SEPT 1 =  1.84              HAAC              .29      .32
  SEPT 1 TO OCT 15 =  1.75              OPPO            14.98    16.79
  SEASON TOTAL     = 12.32              PHHO             3.11     3.49
  LONG TERM AVERAGE= 11.11              XASA             6.47     7.26

                        TOTAL SHRUB PRODUCTION =  104.40   117.03


                              TOTAL PRODUCTION =  385.66   432.32
                              ************************************
```

```
913.    HORS CREK     3 JUNE      1981     IN ARTR

                          NUMBER OF PLOTS = 20
                             PLOT SIZE 1X1
PLANT    PLANT   AVE.     1X1     TOTAL    AVE.     WGT./    LBS    KGS
CODE     NAME    PER-     ABS.    WGT.     WGT.     UNIT     PER    PER
                 CENT     PLOT    GMS/20   /PLOT    COVER    ACRE   HA.
                 COVER    FREQ.   SQ.FT.   OCCUR-   AREA
                 AREA     BASE             RENCES
                          20
*****************************************************************************
   6  SHRUBS
        ARTR       6.47      9.
        PHHO        .03      1.
        OPPO        .03      1.
   3  PER GRASS
        AGSM       3.95     20. 121.08    6.05    1.53 581.38  651.73
        POSE        .59      9.   4.60     .23     .39  22.08   24.75
                 TOTAL PERENNIAL GRASS PRODUCTION = 603.46  676.48
   2  PER FORBS
        CANU        .01      1.
              PERENNIAL FORBS =    .18     .01     .90    .86     .96
   5  ANN GRASS
        BRTE        .04      5.
               ANNUAL GRASSES =    .91     .05    1.30   4.36    4.89
   4  ANN FORBS
        LARE        .02      2.
        CHOE        .01      1.
                 ANNUAL FORBS =    .42     .02     .84   2.01    2.25

          ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 610.69  684.58


    PRECIPITATION DATA                PRODUCTION ESTIMATES OF SHRUBS
    RAIN GAUGE                        AND WOODY MAT FORM PLANTS
    **********************            **********************************
    OCT 15 TO APR 15 =   3.08             ARTR            217.23  243.52
    APR 15 TO JULY 1 =   5.65             CELA              1.41    1.59
    JULY 1 TO SEPT 1 =   1.84             OPPO             21.97   24.62
    SEPT 1 TO OCT 15 =   1.75             PHHO              4.49    5.03
    SEASON TOTAL     =  12.32
    LONG TERM AVERAGE=  11.11

                        TOTAL SHRUB PRODUCTION =  245.10  274.76


                             TOTAL PRODUCTION =  855.79  959.34
                             ***********************************
```

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2301.     MESA ANT      28 MAY          1981        INSIDE

                         NUMBER OF PLOTS = 20
                              PLOT SIZE 1X1
ANT     PLANT     AVE.     1X1      TOTAL     AVE.      WGT./     LBS     KGS
DE      NAME      PER-     ABS.     WGT.      WGT.      UNIT      PER     PER
                  CENT     PLOT     GMS/20    /PLOT     COVER     ACRE    HA.
                  COVER    FREQ.    SQ.FT.    OCCUR-    AREA
                  AREA     BASE               RENCES
                           20
**************************************************************************
  6   SHRUBS
       ARTR       31.65      15.
       CHVI         .26       3.
       PHHO         .28       3.
  3   PER GRASS
       AGSM         .48      19.     7.75      .39       .81    37.21     41.71
       ORHY         .10       1.      .93      .05       .47     4.46      5.00
       POSE         .88      13.    10.11      .51       .57    48.54     54.41
       SIHY         .06       2.      .62      .03       .52     2.97      3.33

        ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION =    93.18   104.45



   PRECIPITATION DATA                      PRODUCTION ESTIMATES OF SHRUBS
   RAIN GAUGE                              AND WOODY MAT FORM PLANTS
 **********************                    ********************************
  OCT 15 TO APR 15 = 2.14                     ANDI              4.15     4.65
  APR 15 TO JULY 1 = 2.85                     ARTR            297.64   333.66
  JULY 1 TO SEPT 1 = 1.25                     CELA             12.87    14.43
  SEPT 1 TO OCT 15 =  .93                     CHVI             10.13    11.35
  SEASON TOTAL     = 7.17                     PHHO             49.26    55.22
  LONG TERM AVERAGE= 7.53

                          TOTAL SHRUB PRODUCTION =  374.05   419.31



                                 TOTAL PRODUCTION =  467.23   523.77
                                 **********************************
   104.    OWL DRAW        29  MAY         1981      IN ARNO

                              NUMBER OF PLOTS = 20
                                PLOT SIZE 1X1
 PLANT    PLANT     AVE.     1X1     TOTAL    AVE.     WGT./    LBS    KGS
 CODE     NAME      PER-     ABS.    WGT.     WGT.     UNIT     PER    PER
                    CENT     PLOT    GMS/20   /PLOT    COVER    ACRE   HA.
                    COVER    FREQ.   SQ.FT.   OCCUR-   AREA
                    AREA     BASE             RENCES
                             20
******************************************************************************
   6  SHRUBS
        ARNO      21.25      17.
        ARTR        .68       3.
        PHHO        .12       7.
   3  PER GRASS
        AGSM        .59      19.     8.51      .43      .61    40.66    45.30
        AGSP        .12       2.      .79      .04      .33     3.79     4.25
        POSE        .56      17.     6.01      .30      .54    28.65    32.34
                    TOTAL PERENNIAL GRASS PRODUCTION =          73.50    82.39
   2  PER FORBS
        ASSP        .13       3.
        ASMI2       .02       1.
        CACH        .09       1.
        CANU        .47      17.
        CRMO        .22       8.
        LOOR        .03       1.
        SELA        .04       1.
        TRGY        .05       3.
        VINU        .06       4.
        UNKN2       .04       4.
              PERENNIAL FORBS =      6.43      .32      .28    30.87    34.61
   4  ANN FORBS
        UNKN1      .03        4.
                  ANNUAL FORBS =      .06      .00      .10      .28      .31

           ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 104.65   117.31


   PRECIPITATION DATA                   PRODUCTION ESTIMATES OF SHRUBS
   RAIN GAUGE                           AND WOODY MAT FORM PLANTS
**********************                  ********************************
  OCT 15 TO APR 15 =   3.43                ARHO               9.16    10.27
  APR 15 TO JULY 1 =   3.92                ARNO             193.95   217.42
  JULY 1 TO SEPT 1 =   2.02                ARTR               4.42     4.96
  SEPT 1 TO OCT 15 =    .64                CHVI               1.42     1.59
  SEASON TOTAL     =  10.01                HAAC               3.42     3.84
  LONG TERM AVERAGE=   9.66                MAGR               5.85     6.56
                                           OPPO               4.06     4.55
                                           PHHO               4.25     4.76

                                TOTAL SHRUB PRODUCTION =  226.54   253.95


                                      TOTAL PRODUCTION =  331.19   371.26
                                      **********************************
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104.    OWL DRAW       29 MAY       1981       IN ARTR

                        NUMBER OF PLOTS = 20
                          PLOT SIZE 1X1
PLANT    PLANT    AVE.    1X1     TOTAL    AVE.    WGT./   LBS    KGS
CODE     NAME     PER-    ABS.    WGT.     WGT.    UNIT    PER    PER
                  CENT    PLOT    GMS/20   /PLOT   COVER   ACRE   HA.
                  COVER   FREQ.   SQ.FT.   OCCUR-  AREA
                  AREA    BASE             RENCES
                          20
****************************************************************************
  6   SHRUBS
        ARNO        2.00      1.
        ARTR       15.04     15.
        PHHO         .14      7.
  3   PER GRASS
        AGSM         .68     19.   13.11     .66     .96   62.95    70.57
        AGSP         .02      1.     .21     .01     .53    1.00     1.12
        POSE        1.20     20.   15.53     .78     .65   74.57    83.59
                  TOTAL PERENNIAL GRASS PRODUCTION = 138.52   155.28
  2   PER FORBS
        AGGL         .21      9.
        ALTE         .05      3.
        ASMI2        .33      8.
        CACH         .01      1.
        CANU         .18      7.
        CRMO         .39      7.
        EROC         .07      3.
        LERE         .05      1.
        LOOR         .02      1.
        TRGY         .28      7.
        VIAM         .09      3.
        VINU         .60      7.
        UNKN1        .03      2.
        UNKN2        .09      2.
              PERENNIAL FORBS =    14.44     .72     .31   69.33    77.72
  4   ANN FORBS
        COPA         .05      5.
        DEPI         .00      1.
        UNKN3        .02      1.
                ANNUAL FORBS =       .11     .01     .08     .52      .58

           ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 208.37   233.58


    PRECIPITATION DATA              PRODUCTION ESTIMATES OF SHRUBS
    RAIN GAUGE                      AND WOODY MAT FORM PLANTS
  *********************            ***********************************
  OCT 15 TO APR 15 =   3.43           ARTR            331.26   371.34
  APR 15 TO JULY 1 =   3.92           CELA               .28      .32
  JULY 1 TO SEPT 1 =   2.02           CHVI              1.25     1.40
  SEPT 1 TO OCT 15 =    .64           HAAC               .48      .54
  SEASON TOTAL     =  10.01           MAGR              2.13     2.38
  LONG TERM AVERAGE=   9.66           OPPO              1.48     1.66
                                      PHHO              1.79     2.00

                     TOTAL SHRUB PRODUCTION =  338.67   379.65

                     TOTAL PRODUCTION =        547.04   613.23
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406.   RED WASH 2     4 JUNE        1981       IN NATIVE

                          NUMBER OF PLOTS = 20
                          PLOT SIZE 1X1
PLANT    PLANT    AVE.    1X1     TOTAL    AVE.    WGT./    LBS     KGS
CODE     NAME     PER-    ABS.    WGT.     WGT.    UNIT     PER     PER
                  CENT    PLOT    GMS/20   /PLOT   COVER    ACRE    HA.
                  COVER   FREQ.   SQ.FT.   OCCUR-  AREA
                  AREA    BASE             RENCES
                          20
*************************************************************************
  6   SHRUBS
        ARTR       8.65     4.
        CHNA        .05     1.
        CHVI       1.00     4.
        EROV        .10     2.
        PHHO       2.53     7.
        TECA        .68     2.
  3   PER GRASS
        AGSM        .46    19.     6.86     .34      .74   32.93    36.91
        AGSP        .12     3.     3.85     .19     1.60   18.48    20.72
        ORHY        .27     4.     2.71     .14      .51   13.01    14.58
        POSE        .35     3.     2.72     .14      .39   13.06    14.64
        STCO       1.47     7.    12.55     .63      .43   60.26    67.55
                  TOTAL PERENNIAL GRASS PRODUCTION = 137.74   154.41
  2   PER FORBS
        ALTE        .01     1.
        ERAS        .10     1.
        ERBR        .30     1.
        GICO        .25     1.
        MACA        .30     1.
        PECL        .85     3.
              PERENNIAL FORBS =    4.43     .22      .12   21.27    23.84

           ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 159.01   178.25


   PRECIPITATION DATA                PRODUCTION ESTIMATES OF SHRUBS
   RAIN GAUGE                        AND WOODY MAT FORM PLANTS
 **********************              ***********************************
   OCT 15 TO APR 15 =   2.46           ARTR              122.44   137.25
   APR 15 TO JULY 1 =   2.34           CHNA                8.16     9.15
   JULY 1 TO SEPT 1 =   1.73           CHVI               25.41    28.48
   SEPT 1 TO OCT 15 =   2.35           ERBR                1.75     1.96
   SEASON TOTAL     =   8.88           EROV                1.35     1.52
   LONG TERM AVERAGE=   7.11           PHHO               21.33    23.91
                                       TECA                6.23     6.98

                          TOTAL SHRUB PRODUCTION =  186.66   209.25


                              TOTAL PRODUCTION =  345.67   387.50
                              **********************************
```

```
1003.    SHOS ANT 7     18 MAY             1981       IN NATIVE

                      NUMBER OF PLOTS = 20
                         PLOT SIZE 1X1
LANT     PLANT     AVE.    1X1      TOTAL     AVE.     WGT./    LBS     KGS
ODE      NAME      PER-    ABS.     WGT.      WGT.     UNIT     PER     PER
                   CENT    PLOT     GMS/20    /PLOT    COVER    ACRE    HA.
                   COVER   FREQ.    SQ.FT.    OCCUR-   AREA
                   AREA    BASE               RENCES
                           20
***********************************************************************************
 6   SHRUBS
       ARTR      20.30      16.
       OPPO        .05       1.
       PHHO        .12       2.
 3   PER GRASS
       AGSM        .19      13.     1.74       .09      .46     8.35      9.36
       BOGR        .21       3.      .40       .02      .10     1.92      2.15
       POSE       1.00      11.     4.54       .23      .23    21.79     24.43
       SIHY        .10       1.      .01       .00      .01      .04       .04
       STCO        .42       9.     3.17       .16      .38    15.22     17.06
                   TOTAL PERENNIAL GRASS PRODUCTION =         47.32     53.05
 2   PER FORBS
       ALTE        .04       3.
       ASPU        .12       2.
              PERENNIAL FORBS =     2.82       .14      .94    13.54     15.18
 4   ANN FORBS
       DEPI        .01       1.
       SAIB        .02       1.
                ANNUAL FORBS =       .05       .00      .13      .24       .27

       ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION =                61.10     68.49


   PRECIPITATION DATA                  PRODUCTION ESTIMATES OF SHRUBS
   RAIN GAUGE                          AND WOODY MAT FORM PLANTS
   *********************               ***********************************
   OCT 15 TO APR 15 =  2.56             ARTR              260.15    291.63
   APR 15 TO JULY 1 =  5.45             OPPO               32.53     36.46
   JULY 1 TO SEPT 1 =  1.55             PHHO                2.72      3.05
   SEPT 1 TO OCT 15 =  1.34
   SEASON TOTAL     = 10.90
   LONG TERM AVERAGE=  8.44

                         TOTAL SHRUB PRODUCTION =          295.40    331.14


                               TOTAL PRODUCTION =          356.50    399.64
                               ***********************************
```

```
      0.    SWEETWATR     1 JUNE       1981      IN ARNO

                      NUMBER OF PLOTS = 20
                        PLOT SIZE 1X1
 PLANT   PLANT   AVE.   1X1    TOTAL   AVE.   WGT./   LBS   KGS
 CODE    NAME    PER-   ABS.   WGT.    WGT.   UNIT    PER   PER
                 CENT   PLOT   GMS/20  /PLOT  COVER   ACRE  HA.
                 COVER  FREQ.  SQ.FT.  OCCUR- AREA
                 AREA   BASE           RENCES
                        20
**********************************************************************
    6  SHRUBS
         ARFR       .25     1.
         ARNO      2.63     5.
         ARTR      1.77     5.
         OPPO       .25     1.
         PHHO      1.56     6.
         TECA      1.25     4.
    3  PER GRASS
         AGSM       .33     7.   2.23    .11    .34  10.70   11.99
         AGSP       .35     1.    .78    .04    .11   3.74    4.19
         CAFI       .37     3.   1.79    .09    .25   8.59    9.63
         KOCR      1.05    10.   9.72    .49    .47  46.67   52.32
         POSE       .45     2.    .42    .02    .05   2.01    2.25
         STCO      3.09    15.  28.65   1.43    .46 137.56  154.20
                 TOTAL PERENNIAL GRASS PRODUCTION = 209.27  234.59
    2  PER FORBS
         ASPU       .12     1.
         COPA       .72    18.
         CYMO       .01     1.
         ERPU       .01     2.
         LELU       .02     2.
             PERENNIAL FORBS =  15.67    .78    .90  75.24   34.34
    4  ANN FORBS
         LUPU       .35     2.
                ANNUAL FORBS =   0.00   0.00   0.00   0.00    0.00

           ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 284.51  318.94


      PRECIPITATION DATA            PRODUCTION ESTIMATES OF SHRUBS
      RAIN GAUGE                    AND WOODY MAT FORM PLANTS
     **********************         ********************************
     OCT 15 TO APR 15 =  2.74         ARFR            2.05    2.30
     APR 15 TO JULY 1 =  2.85         ARHO            1.12    1.25
     JULY 1 TO SEPT 1 =  1.39         ARNO           64.59   72.41
     SEPT 1 TO OCT 15 =  1.08         ARTR            5.65    6.33
     SEASON TOTAL     =  8.06         ASSP           22.95   25.72
     LONG TERM AVERAGE=  8.84         CHVI            4.10    4.59
                                      OPPU            3.42    3.83
                                      PHHC           13.86   15.53
                                      TECA           35.97   40.33

                          TOTAL SHRUB PRODUCTION =  153.70  172.30


                                TOTAL PRODUCTION =  438.21  491.24
                                **********************************
```

```
   0.    SWEETWATR     1 JUNE        1981       IN ARTR

                   NUMBER OF PLOTS = 20
                        PLOT SIZE 1X1
PLANT     PLANT    AVE.   1X1     TOTAL    AVE.     WGT./    LBS     KGS
CODE      NAME     PER-   ABS.    WGT.     WGT.     UNIT     PER     PER
                   CENT   PLOT    GMS/20   /PLOT    COVER    ACRE    HA.
                   COVER  FREQ.   SQ.FT.   OCCUR-   AREA
                   AREA   BASE             RENCES
                          20
**************************************************************************
  6   SHRUBS
        ARTR       4.00    6.
        CHVI       2.85    7.
        LEPU       1.33    4.
        PHHO       1.08    5.
  3   PER GRASS
        AGSM        .47   14.    3.57      .16       .38   17.14    19.21
        CAEL       1.16   12.    2.39      .12       .10   11.47    12.86
        KOCR        .48   11.    8.06      .40       .85   36.79    43.48
        PUSE        .06    3.    3.83      .19      3.19   18.39    20.62
        STCO       3.01   18.   20.46     1.02       .34   98.24   110.13
                   TOTAL PERENNIAL GRASS PRODUCTION = 184.03   206.30
  2   PER FORBS
        ALTE        .09    5.
        ARHO2       .06    2.
        ASMI2       .35    1.
        COPA        .25    1.
        CRBR        .06    2.
        CYMO        .01    1.
        DEGE        .02    3.
        GIPU        .06    4.
        LELU        .01    1.
        MACA        .04    3.
        OECO       0.00    0.
        VINU        .01    2.
               PERENNIAL FORBS =   22.37    1.12     1.16 107.41   120.41

          ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 357.65   400.93


    PRECIPITATION DATA                PRODUCTION ESTIMATES OF SHRUBS
    RAIN GAUGE                        AND WOODY MAT FORM PLANTS
 **********************               *********************************
   OCT 15 TO APR 15 =   2.74              ARFR                .73       .82
   APR 15 TO JULY 1 =   2.85              ARHO               2.95      3.31
   JULY 1 TO SEPT 1 =   1.39              ARNO               2.51      2.81
   SEPT 1 TO OCT 15 =   1.08              ARTR             194.70    218.26
   SEASON TOTAL     =   8.06              CHVI              25.54     28.62
   LONG TERM AVERAGE=   8.84              LEPU               9.23     10.34
                                          OPPU                .52       .58
                                          PHHO              11.47     12.86
                                          TECA               4.57      5.12

                          TOTAL SHRUB PRODUCTION =  252.22    282.73


                               TOTAL PRODUCTION =  609.87    683.56
                               *************************************
```

```
1006.    UPPER GOV     1 JUNE         1981       IN NATIVE

                        NUMBER OF PLOTS = 20
                        PLOT SIZE 1X1
PLANT    PLANT    AVE.   1X1      TOTAL    AVE.     WGT./    LBS     KGS
CODE     NAME     PER-   ABS.     WGT.     WGT.     UNIT     PER     PER
                  CENT   PLOT     GMS/20   /PLOT    COVER    ACRE    HA.
                  COVER  FREQ.    SQ.FT.   OCCUR-   AREA
                  AREA   BASE              RENCES
                         20
****************************************************************************
  6  SHRUBS
       ARTR       5.51      3.
       PHHO        .54      8.
  3  PER GRASS
       AGSM        .90     20.   18.40      .92    1.02   88.35    99.04
       KUCR       2.14     15.   25.94     1.30     .61  124.55   139.62
       ORHY       0.00      0.    1.76      .09      R     8.54     9.57
       POSE       1.84     19.   10.84      .54     .29   52.05    58.35
                  TOTAL PERENNIAL GRASS PRODUCTION = 273.49   306.58
  2  PER FORBS
       AGGL        .02      1.
       ALTE        .05      5.
       CAAN        .02      2.
       CRMO        .11      5.
       CYMO        .05      6.
       SPCO        .03      3.
       VINU        .03      4.
              PERENNIAL FORBS =   5.15      .26     .89   24.72    27.71

           ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 298.21   334.29


    PRECIPITATION DATA                   PRODUCTION ESTIMATES OF SHRUBS
    RAIN GAUGE                           AND WOODY MAT FORM PLANTS
   **********************                ***********************************
   OCT 15 TO APR 15 =   3.28               ARTR             118.06   132.37
   APR 15 TO JULY 1 =   3.94               OPPO              16.93    18.98
   JULY 1 TO SEPT 1 =   1.30               PHHO               3.70     4.15
   SEPT 1 TO OCT 15 =    .90
   SEASON TOTAL     =   9.42
   LONG TERM AVERAGE=   9.26

                               TOTAL SHRUB PRODUCTION =  138.71   155.50


                                     TOTAL PRODUCTION =  436.92   489.79
                                     ******************************
```

Table V. Vegetation cover data, precipitation and herbage production data alphabetically by exclosure, grazing treatment and shrub control treatment for summer 1981.

Exclosure	Page
Big Trails GRI	165
Boysen	167
Bud Kimball	169
Buffalo Creek	173
Burnt Wagon	175
Cedar Mountain	177
Cochran	179
Cumberland #1	182
Cumberland #2	186
Cumberland #3	190
Cumberland #4	194
Demer	196
Dutch Nick	198
Farson	200
Granite Mountain	202
Halogeton Exc. #1	206
Halogeton Exc. #2	207
Halogeton Exc. #3	208
Halogeton Pasture #6	209
Halogeton Pasture #7a	210
Horse Creek	211
Kane Deer	215
Kane GRI	219
Kirby Creek	221
Lander Ant	223
Lower Government Draw	225
McGraw Flats	229
Medicine Lodge GRI	231
Mesa Antelope	233
North Butte Relic	235
Owl Draw	236
Red Wash #2	240
Round Top Relic	244
Sand Gulch	245
Shoshoni Ant #2	247
Shoshoni Ant #4	252
Shoshoni Ant #7	257
Shoshoni Ant #8	262
Shoshoni Ant #9	267
Shoshoni Ant #11	272
Smilo	277
Sweetwater	281
Two Mile Hill	285
Upper Government Draw	287
West Pasture	291

```
2017.   BIG TRAILS     23 JULY        1981      IN SPRAY

                        NUMBER OF PLOTS = 20
                           PLOT SIZE 1X1
PLANT    PLANT    AVE.    1X1     TOTAL    AVE.    WGT./   LBS   KGS
CODE     NAME     PER-    ABS.    WGT.     WGT.    UNIT    PER   PER
                  CENT    PLOT    GMS/20   /PLOT   COVER   ACRE  HA.
                  COVER   FREQ.   SQ.FT.   OCCUR-  AREA
                  AREA    BASE             RENCES
                          20
**************************************************************************
   6  SHRUBS
       JUOS        1.00      1.
   5  ANN GRASS
       BRTE         .25     18.
             ANNUAL GRASSES =  50.39    2.52    9.69 241.95  271.23
   4  ANN FORBS
       UNKN         .05      5.
               ANNUAL FORBS =   1.19     .06    1.19    5.71    6.40

        ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 247.66  277.63


     PRECIPITATION DATA
     RAIN GAUGE
   ***********************
     OCT 15 TP APR 15 =  4.29
     APR 15 TO JULY 1 =  4.64
     JULY 1 TO SEPT 1 =  2.29
     SEPT 1 TO OCT 15 =  1.30
     SEASON LONG TOTAL= 12.52
     LONG TERM AVERAGE= 12.98
```

```
2017.   BIG TRAILS    23 JULY        1981      OUT NATIVE

                     NUMBER OF PLOTS = 20
                       PLOT SIZE 1X1
PLANT    PLANT   AVE.    1X1    TOTAL    AVE.    WGT./   LBS     KGS
CODE     NAME    PER-    ABS.   WGT.     WGT.    UNIT    PER     PER
                 CENT    PLOT   GMS/20   /PLOT   COVER   ACRE    HA.
                 COVER   FREQ.  SQ.FT.   OCCUR-  AREA
                 AREA    BASE            RENCES
                         20
**************************************************************************
  3   PER GRASS
       POSE         .04      2.     .45      .02     .64    2.16     2.42
                TOTAL PERENNIAL GRASS PRODUCTION =          2.16     2.42
  5   ANN GRASS
       ERTE         .16     15.
             ANNUAL GRASSES =  13.10         .65    4.09   62.90    70.51
  4   ANN FORBS
       COPA2        .02      2.
       DEPI         .02      2.
       LARE         .04      4.
       SIAL         .01      1.
               ANNUAL FORBS =   1.63         .08    1.02    7.82     8.77

          ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION =  72.88    81.70


   PRECIPITATION DATA
   RAIN GAUGE
 ************************
   OCT 15 TP APR 15 =  4.29
   APR 15 TO JULY 1 =  4.64
   JULY 1 TO SEPT 1 =  2.29
   SEPT 1 TO OCT 15 =  1.30
   SEASON LONG TOTAL= 12.52
   LONG TERM AVERAGE= 12.98
 1002.     BOYSEN       20 JULY      1981       IN NATIVE

                          NUMBER OF PLOTS = 20
                            PLOT SIZE 1X1
PLANT    PLANT    AVE.    1X1     TOTAL    AVE.    WGT./    LBS     KGS
CODE     NAME     PER-    ABS.    WGT.     WGT.    UNIT     PER     PER
                  CENT    PLOT    GMS/20   /PLOT   COVER    ACRE    HA.
                  COVER   FREQ.   SQ.FT.   OCCUR-  AREA
                  AREA    BASE             RENCES
                          20
***************************************************************************
   6  SHRUBS
        OPPO        .10      1.
   3  PER GRASS
        BUGR        2.32     15.  16.59     .83     .36  79.66    89.30
                  TOTAL PERENNIAL GRASS PRODUCTION =     79.66    89.30
   2  PER FORBS
        SPCO        .24      15.
             PERENNIAL FORBS =      5.85     .29    1.24  28.08    31.48

          ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 107.74  120.78


     PRECIPITATION DATA                PRODUCTION ESTIMATES OF SHRUBS
     RAIN GAUGE                        AND WOODY MAT FORM PLANTS
     ***********************           ********************************
    OCT 15 TP APR 15 =  1.63            OPPO             7.82    8.77
    APR 15 TO JULY 1 =  3.91
    JULY 1 TO SEPT 1 =  1.41
    SEPT 1 TO OCT 15 =   .72
    SEASON LONG TOTAL=  7.67
    LONG TERM AVERAGE=  5.12

                              TOTAL SHRUB PRODUCTION =   7.82    8.77


                                   TOTAL PRODUCTION =  115.56  129.55
                                   ********************************
```

```
1002.    BOYSEN          20 JULY       1981       OUT NATIVE

                       NUMBER OF PLOTS = 20
                         PLOT SIZE 1X1
PLANT     PLANT    AVE.    1X1     TOTAL    AVE.    WGT./     LBS     KGS
CODE      NAME     PER-    ABS.    WGT.     WGT.    UNIT      PER     PER
                   CENT    PLOT    GMS/20   /PLOT   COVER     ACRE    HA.
                   COVER   FREQ.   SQ.FT.   OCCUR-  AREA
                   AREA    BASE             RENCES
                           20
*****************************************************************************
 6   SHRUBS
       ATGA          .01      1.      .14     .01     .70     .67      .75
 3   PER GRASS
       BOGR         3.46     16.    17.26     .86     .25   82.87    92.90
       SIHY          .25      2.      .73     .04     .15    3.50     3.92
                  TOTAL PERENNIAL GRASS PRODUCTION =        86.37    96.82
 2   PER FORBS
       SPCO          .11      7.
             PERENNIAL FORBS =       3.57     .18    1.28   17.14    19.21

           ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 106.96   119.90


   PRECIPITATION DATA                  PRODUCTION ESTIMATES OF SHRUBS
   RAIN GAUGE                          AND WOODY MAT FORM PLANTS
 ***********************               ******************************
   OCT 15 TP APR 15 =  1.63                ATCO            20.19    22.63
   APR 15 TO JULY 1 =  3.91                OPPO             5.40     6.05
   JULY 1 TO SEPT 1 =  1.41
   SEPT 1 TO OCT 15 =   .72
   SEASON LONG TOTAL=  7.67
   LONG TERM AVERAGE=  5.12

                          TOTAL SHRUB PRODUCTION =     25.58    28.68


                                TOTAL PRODUCTION =  132.54   148.58
                                ***********************************
   2007.  BUDKIMBALL     15 JULY        1981     IN NATIVE

                      NUMBER OF PLOTS = 20
                        PLOT SIZE 1X1
 PLANT   PLANT   AVE.   1X1    TOTAL    AVE.   WGT./   LBS   KGS
 CODE    NAME    PER-   ABS.   WGT.     WGT.   UNIT    PER   PER
                 CENT   PLOT   GMS/20   /PLOT  COVER   ACRE  HA.
                 COVER  FREQ.  SQ.FT.   OCCUR- AREA
                 AREA   BASE            RENCES
                        20
************************************************************************
    6  SHRUBS
         ARTR      8.68    12.
         OPPO       .83     4.
         PHHO      1.18     7.
    3  PER GRASS
         AGSM       .68    19.  10.47     .52    .77  50.27   56.35
         POSE       .24    10.   1.97     .10    .41   9.45   10.59
         SIHY       .08     3.   1.86     .09   1.24   6.93   10.01
         STCO       .03     1.    .61     .03   1.22   2.92    3.27
                 TOTAL PERENNIAL GRASS PRODUCTION =   71.57   80.23
    2  PER FORBS
         CACH       .06     7.
         ERPU       .12     8.
         LERE       .01     2.
         SPCO       .01     1.
             PERENNIAL FORBS =   7.00     .35   1.79  33.61   37.68
    4  ANN FORBS
         CHDE       .01     1.
         COPA2      .01     1.
         DEPI       .01     1.
         LARE       .01     1.
         PLPA       .01     2.
                ANNUAL FORBS =    .17     .01    .28    .81     .91

           ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 105.99  118.81


      PRECIPITATION DATA            PRODUCTION ESTIMATES OF SHRUBS
      RAIN GAUGE                    AND WOODY MAT FORM PLANTS
    ***********************         ********************************
     OCT 15 TO APR 15 =  2.04         ARTR          204.67  229.44
     APR 15 TO JULY 1 =  4.00         OPPO           20.33   22.80
     JULY 1 TO SEPT 1 =  1.05         PHHO           18.66   20.91
     SEPT 1 TO OCT 15 =  1.25
     SEASON LONG TOTAL=  8.34
     LONG TERM AVERAGE=  9.25

                          TOTAL SHRUB PRODUCTION =   243.66  273.15


                                TOTAL PRODUCTION =   349.65  391.96
                                ***********************************
```

```
2007.    BUDKIMBALL     15 JULY        1981      OUT NATIVE

                      NUMBER OF PLOTS = 20
                        PLOT SIZE 1X1
PLANT    PLANT    AVE.    1X1     TOTAL    AVE.     WGT./    LBS     KGS
CODE     NAME     PER-    ABS.    WGT.     WGT.     UNIT     PER     PER
                  CENT    PLOT    GMS/20   /PLOT    COVER    ACRE    HA.
                  COVER   FREQ.   SQ.FT.   OCCUR-   AREA
                  AREA    BASE             RENCES
                          20
**************************************************************************
   6   SHRUBS
         ARTR      18.50     15.
         OPPO       2.47      5.
         PHHO        .17      3.
   3   PER GRASS
         AGSM        .49     18.   10.88     .54     1.12   52.24    58.56
         POSE        .57     17.    4.20     .21      .37   20.16    22.60
         SIHY        .02      1.     .10     .01      .25     .48      .54
                  TOTAL PERENNIAL GRASS PRODUCTION =        72.88    81.70
   2   PER FORBS
         ERPU        .05      4.
         LERE        .01      1.
              PERENNIAL FORBS =      .83     .04      .75    3.98     4.46
   5   ANN GRASS
         BRTE        .01      1.
         VUOC        .03      5.
               ANNUAL GRASSES =      .38     .02      .54    1.82     2.04
   4   ANN FORBS
         COPA2       .01      2.
         HAGL        .01      1.
         LEDE        .01      1.
         MONU        .01      1.
         PLPA        .07      6.
                ANNUAL FORBS =     1.07     .05      .59    5.13     5.75

          ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION =   83.81    93.95


    PRECIPITATION DATA                    PRODUCTION ESTIMATES OF SHRUBS
    RAIN GAUGE                            AND WOODY MAT FORM PLANTS
    ************************              ********************************
    OCT 15 TP APR 15 =    2.04               ARTR            164.83   184.77
    APR 15 TO JULY 1 =    4.00               OPPO             10.87    12.18
    JULY 1 TO SEPT 1 =    1.05               PHHO               .98     1.10
    SEPT 1 TO OCT 15 =    1.25
    SEASON LONG TOTAL=    8.34
    LONG TERM AVERAGE=    9.25

                           TOTAL SHRUB PRODUCTION =  176.68   198.06


                                 TOTAL PRODUCTION =  260.49   292.01
                                 ***********************************
```

```
  2007.   BUDKIMBALL    15 JULY       1981      IN SPRAY

                     NUMBER OF PLOTS = 20
                       PLOT SIZE 1X1
PLANT   PLANT   AVE.   1X1    TOTAL   AVE.   WGT./  LBS    KGS
CODE    NAME    PER-   ABS.   WGT.    WGT.   UNIT   PER    PER
                CENT   PLOT   GMS/20  /PLOT  COVER  ACRE   HA.
                COVER  FREQ.  SQ.FT.  OCCUR- AREA
                AREA   BASE           RENCES
                       20
************************************************************************
   6  SHRUBS
        ARTR      2.45     12.
        OPPO       .13      2.
        PHHO       .13      2.
   3  PER GRASS
        AGSM       .49     18.   16.68    .83   1.72  80.09   89.78
        POSE       .57     17.    6.93    .35    .61  33.27   37.30
        STCO       .66     10.   27.55   1.38   2.10 132.28  148.29
                TOTAL PERENNIAL GRASS PRODUCTION = 245.64  275.36
   2  PER FORBS
        ERPU       .03      3.
        LERE       .01      1.
            PERENNIAL FORBS =    1.15    .06   1.64   5.52    6.19
   5  ANN GRASS
        BRTE       .64     17.
             ANNUAL GRASSES =   30.93   1.55   2.42 148.51  166.48
        VUOC       .02      4.
   4  ANN FORBS
        COPA2      .04      7.
        DEPI       .01      2.
        LARE       .01      1.
        LEDE       .02      4.
        PLPA       .02      4.
               ANNUAL FORBS =     .61    .03    .34   2.92    3.27

          ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 402.59  451.30


     PRECIPITATION DATA               PRODUCTION ESTIMATES OF SHRUBS
     RAIN GAUGE .                     AND WOODY MAT FORM PLANTS
   ***********************            **********************************
    OCT 15 TP APR 15 =  2.04            ARTR            50.36   56.47
    APR 15 TO JULY 1 =  4.00            OPPO              .46     .51
    JULY 1 TO SEPT 1 =  1.05            PHHO             1.26    1.41
    SEPT 1 TO OCT 15 =  1.25
    SEASON LONG TOTAL=  8.34
    LONG TERM AVERAGE=  9.25

                         TOTAL SHRUB PRODUCTION =       52.10   58.40


                               TOTAL PRODUCTION =      454.69  509.70
                               **********************************
```

```
2007.   BUDKIMBALL    15 JULY      1981      OUT SPRAY

                  NUMBER OF PLOTS = 20
                    PLOT SIZE 1X1
PLANT   PLANT   AVE.   1X1    TOTAL    AVE.    WGT./   LBS    KGS
CODE    NAME    PER-   ABS.   WGT.     WGT.    UNIT    PER    PER
                CENT   PLOT   GMS/20   /PLOT   COVER   ACRE   HA.
                COVER  FREQ.  SQ.FT.   OCCUR-  AREA
                AREA   BASE            RENCES
                       20
*************************************************************************
  6  SHRUBS
       ARTR      4.44    8.
       OPPO       .75    1.
  3  PER GRASS
       AGSM      1.07    20.  22.42    1.12    1.05 107.65   120.68
       POSE      1.53    20.   7.93     .40     .26  38.07    42.68
               TOTAL PERENNIAL GRASS PRODUCTION = 145.72   163.35
  2  PER FORBS
       LERE       .01     1.
           PERENNIAL FORBS =     .04     .00     .40    .19      .21
  5  ANN GRASS
       BRTE       .02     1.
       VUOC       .15    16.
             ANNUAL GRASSES =   3.69     .18    1.03  17.71    19.85
  4  ANN FORBS
       COPA2      .02     4.
       LARE       .01     2.
       LEDE       .02     4.
       PLPA       .93    18.
               ANNUAL FORBS =  15.53     .78     .79  74.57    83.59

         ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 238.19   267.01


    PRECIPITATION DATA             PRODUCTION ESTIMATES OF SHRUBS
    RAIN GAUGE                     AND WOODY MAT FORM PLANTS
    ***********************        **********************************
    OCT 15 TP APR 15 =  2.04         ARTR             412.62  462.54
    APR 15 TO JULY 1 =  4.00         OPPO              21.20   23.76
    JULY 1 TO SEPT 1 =  1.05
    SEPT 1 TO OCT 15 =  1.25
    SEASON LONG TOTAL=  8.34
    LONG TERM AVERAGE=  9.25

                        TOTAL SHRUB PRODUCTION =  433.81  486.31


                           TOTAL PRODUCTION =  672.00  753.32
                           **********************************
```

```
2002.   BUFFALO CK    29 JULY       1981       IN NATIVE

                          NUMBER OF PLOTS = 20
                             PLOT SIZE 1X1
PLANT    PLANT   AVE.    1X1     TOTAL    AVE.    WGT./   LBS     KGS
CODE     NAME    PER-    ABS.    WGT.     WGT.    UNIT    PER     PER
                 CENT    PLOT    GMS/20   /PLOT   COVER   ACRE    HA.
                 COVER   FREQ.   SQ.FT.   OCCUR-  AREA
                 AREA    BASE             RENCES
                         20
*************************************************************************
  6  SHRUBS
       ARTR      4.40      7.
       CHVI       .60      5.
       OPPO       .15      3.
       PHHO      1.39     10.
  3  PER GRASS
       AGSP      1.33     18.   45.11    2.26    1.70  216.60   242.81
       BOGR       .03      1.     .06     .00     .12     .26      .31
       POSE       .29     17.    3.41     .17     .59   16.37    18.35
                 TOTAL PERENNIAL GRASS PRODUCTION = 233.25   261.47
  2  PER FORBS
       ALTE       .01      2.
       CAAN       .04      2.
       CRAC       .05      1.
       MAGR       .01      2.
       SPCO       .03      3.
             PERENNIAL FORBS =   4.85     .24    1.94   23.28    26.10
  4  ANN FORBS
       DEPI       .01      2.
                ANNUAL FORBS =    .09     .00     .45     .43      .48

          ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 256.96   288.05



    PRECIPITATION DATA                PRODUCTION ESTIMATES OF SHRUBS
    RAIN GAUGE                        AND WOODY MAT FORM PLANTS
   **********************             *******************************
    OCT 15 TP APR 15 =  2.97            ARTR              178.13   199.68
    APR 15 TO JULY 1 =  4.05            OPPO               14.74    16.52
    JULY 1 TO SEPT 1 =  1.35            PHHO                8.04     9.02
    SEPT 1 TO OCT 15 =  1.05            XASA                4.95     5.55
    SEASON LONG TOTAL=  9.42
    LONG TERM AVERAGE= 10.30

                          TOTAL SHRUB PRODUCTION =  205.87   230.78



                              TOTAL PRODUCTION =  462.83   518.83
                              ***********************************
```

```
 2002.   BUFFALO CK     29 JULY       1981      OUT NATIVE

                      NUMBER OF PLOTS = 20
                      PLOT SIZE 1X1
PLANT    PLANT    AVE.    1X1     TOTAL    AVE.    WGT./    LBS    KGS
CODE     NAME     PER-    ABS.    WGT.     WGT.    UNIT     PER    PER
                  CENT    PLOT    GMS/20   /PLOT   COVER    ACRE   HA.
                  COVER   FREQ.   SQ.FT.   OCCUR-  AREA
                  AREA    BASE             RENCES
                          20
*************************************************************************
   6  SHRUBS
        ARTR     11.85    12.
        OPPO       .10     1.
        PHHO       .48     4.
   3  PER GRASS
        AGSM       .11     5.   1.16     .06      .55    5.56     6.23
        AGSP       .88    15.  33.07    1.65     1.89  158.79   178.00
        BOGR       .01     1.    .08     .00      .80     .38      .43
        POSE       .32    15.   6.12     .31      .96   29.38    32.93
                  TOTAL PERENNIAL GRASS PRODUCTION = 194.11   217.60
   2  PER FORBS
        ASMI       .01     2.
        SPCO       .03     5.
              PERENNIAL FORBS =    .83     .04     1.04    3.98     4.46
   5  ANN GRASS
        BRTE       .01     2.
               ANNUAL GRASSES =    .17     .01      .85     .81      .91
   4  ANN FORBS
        DEPI       .01     2.
                 ANNUAL FORBS =    .19     .01      .95     .91     1.02

           ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 199.81   223.99


     PRECIPITATION DATA                 PRODUCTION ESTIMATES OF SHRUBS
     RAIN GAUGE                         AND WOODY MAT FORM PLANTS
   ***********************              *******************************
    OCT 15 TP APR 15 =    2.97             ARTR              315.59   353.78
    APR 15 TO JULY 1 =    4.05             OPPO               16.86    18.90
    JULY 1 TO SEPT 1 =    1.35             PHHO                3.09     3.46
    SEPT 1 TO OCT 15 =    1.05             XASA                5.30     5.94
    SEASON LONG TOTAL=    9.42
    LONG TERM AVERAGE=   10.30

                          TOTAL SHRUB PRODUCTION =  340.84   382.08



                                TOTAL PRODUCTION =  540.65   606.07
                                ***********************************
```

```
2003.   BURN WAGON      6 JULY        1982       IN NATIVE

                         NUMBER OF PLOTS = 20
                           PLOT SIZE 1X10
PLANT    PLANT     AVE.    1X1     TOTAL    AVE.    WGT./    LBS    KGS
CODE     NAME      PER-    ABS.    WGT.     WGT.    UNIT     PER    PER
                   CENT    PLOT    GMS/20   /PLOT   COVER    ACRE   HA.
                   COVER   FREQ.   SQ.FT.   OCCUR-  AREA
                   AREA    BASE             RENCES
                           20
*******************************************************************************
   6   SHRUBS
         ATGA        6.84     20.   52.19    2.61     .30  250.60   280.92
   3   PER GRASS
         SIHY         .01      2.     .33     .02    1.65    1.58     1.77
                   TOTAL PERENNIAL GRASS PRODUCTION =        1.58     1.77
   2   PER FORBS
         ALTE         .17     19.
         MACA         .41     12.
         MAGL         .04      6.
         MUDI         .06     10.
                 PERENNIAL FORBS =    9.91     .50      .73   47.58    53.34

              ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 299.76   336.03


      PRECIPITATION DATA
      RAIN GAUGE
   ************************
      OCT 15 TP APR 15 = 1.48
      APR 15 TO JULY 1 = 4.16
      JULY 1 TO SEPT 1 =  .34
      SEPT 1 TO OCT 15 =  .76
      SEASON LONG TOTAL= 6.74
      LONG TERM AVERAGE= 6.14
```

****

MAGL normally treated as a shrub. However, clipped at this site with herbaceous production because ATGA was the only other woody species.

```
2003.   BURN WAGON      6 JULY          1982       OUT NATIVE

                      NUMBER OF PLOTS = 20
                        PLOT SIZE 1X10
LANT    PLANT    AVE.    1X1     TOTAL    AVE.     WGT./    LBS    KGS
ODE     NAME     PER-    ABS.    WGT.     WGT.     UNIT     PER    PER
                 CENT    PLOT    GMS/20   /PLOT    COVER    ACRE   HA.
                 COVER   FREQ.   SQ.FT.   OCCUR-   AREA
                 AREA    BASE             RENCES
                         20
***************************************************************************
  6   SHRUBS
        ATGA       5.41    20.   38.08    1.90     .35 182.85   204.97
  3   PER GRASS
        SIHY        .39    13.    2.80     .14     .36  13.42    15.04
                 TOTAL PERENNIAL GRASS PRODUCTION =     13.42    15.04
  2   PER FORBS
        ALTE        .43    20.
        MACA       1.74    19.
        MUDI        .13    17.
            PERENNIAL FORBS =   20.72    1.04      .44  99.50   111.54
  4   ANN FORBS
        LARE        .01     1.
        MATA        .03    12.
        PLPA        .01     1.
               ANNUAL FORBS =     .12     .01      .16    .56      .63

         ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 296.33   332.19


  PRECIPITATION DATA
  RAIN GAUGE
************************
  OCT 15 TP APR 15 = 1.48
  APR 15 TO JULY 1 = 4.16
  JULY 1 TO SEPT 1 =  .34
  SEPT 1 TO OCT 15 =  .76
  SEASON LONG TOTAL= 6.74
  LONG TERM AVERAGE= 6.14
```

****

MAGL normally treated as a shrub. However, clipped at this site with herbaceous production because ATGA was the only other woody species.

```
   403.   CEDAR MT     30 AUGUST     1981      IN NATIVE

                    NUMBER OF PLOTS = 20
                      PLOT SIZE 1X1
PLANT   PLANT  AVE.   1X1    TOTAL   AVE.   WGT./  LBS   KGS
CODE    NAME   PER-   ABS.   WGT.    WGT.   UNIT   PER   PER
               CENT   PLOT   GMS/20  /PLOT  COVER  ACRE  HA.
               COVER  FREQ.  SQ.FT.  OCCUR- AREA
               AREA   BASE           RENCES
                      20
**********************************************************************
   6  SHRUBS
        ARSP         .30    1.
        ARTR        3.00    3.
        ATCO         .50    1.
        CHVI        2.05    2.
        KOAM        1.40    4.
        PHHO         .30    2.
   3  PER GRASS
        AGSP        1.90    5.  17.75    .89    .47  85.22   95.53
        POSE         .47    5.   3.39    .17    .36  16.27   18.24
        SIHY         .27    3.   7.04    .35   1.33  33.80   37.89
        STCO         .15    1.   4.10    .21   1.37  19.68   22.06
               TOTAL PERENNIAL GRASS PRODUCTION = 154.97  173.72
   2  PER FORBS
        PHLO         .03    3.
            PERENNIAL FORBS =   .18    .01    .36    .86     .96
   4  ANN FORBS
        DEPI         .01    1.
               ANNUAL FORBS =   .10    .01    .50    .48     .54

         ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 156.31  175.22


     PRECIPITATION DATA           PRODUCTION ESTIMATES OF SHRUBS
     RAIN GAUGE                   AND WOODY MAT FORM PLANTS
   ***********************        *******************************
    OCT 15 TP APR 15 =3.29          ARTR          133.96  150.17
    APR 15 TO JULY 1 =2.87          ATGA             .76     .87
    JULY 1 TO SEPT 1 = .40          ATCO           93.31  104.60
    SEPT 1 TO OCT 15 =1.61          CHVI            2.78    3.12
    SEASON LONG TOTAL=8.17          KOAM            4.94    5.53
    LONG TERM AVERAGE=8.24          PHHO            1.24    1.40
                                    TENU           11.49   12.88

                        TOTAL SHRUB PRODUCTION =  248.51  278.58


                              TOTAL PRODUCTION =  404.82  453.80
                              **********************************
```

```
403.    CEDAR MT          30 AUGUST       1981        OUT NATIVE

                          NUMBER OF PLOTS = 20
                               PLOT SIZE 1X1
PLANT     PLANT     AVE.     1X1      TOTAL     AVE.     WGT./     LBS     KGS
CODE      NAME      PER-     ABS.     WGT.      WGT.     UNIT      PER     PER
                    CENT     PLOT     GMS/20    /PLOT    COVER     ACRE    HA.
                    COVER    FREQ.    SQ.FT.    OCCUR-   AREA
                    AREA     BASE               RENCES
                             20
*****************************************************************************
  6   SHRUBS
         ARTR      12.56       6.
         ATCO       2.25       2.
         CHVI       1.75       2.
         KOAM        .05       1.
         TENU        .50       1.
  3   PER GRASS
         AGSP        .23       4.     4.80      .24      1.07    23.04    25.83
         POSE        .27       6.     1.62      .06       .31     7.77     8.71
         SIHY        .18       4.     1.77      .09       .51     8.49     9.52

      ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION =                  39.30    44.06


   PRECIPITATION DATA                     PRODUCTION ESTIMATES OF SHRUBS
   RAIN GAUGE                             AND WOODY MAT FORM PLANTS
***********************                   ******************************
  OCT 15 TP APR 15 =  3.29                  ARFR                 .20      .23
  APR 15 TO JULY 1 =  2.87                  ARTR               69.99    78.46
  JULY 1 TO SEPT 1 =   .40                  ATCO               26.13    29.29
  SEPT 1 TO OCT 15 =  1.61                  CELA                 .00      .01
  SEASON LONG TOTAL=  8.17                  CHVI                3.49     3.91
  LONG TERM AVERAGE=  8.24                  KOAM                 .28      .31
                                            LEPU                 .21      .23
                                            OPPO                2.87     3.22
                                            PHHO                 .71      .80
                                            TENU               10.97    12.29

                           TOTAL SHRUB PRODUCTION =           114.85   128.74


                                 TOTAL PRODUCTION =           154.15   172.80
                                 ************************************
```

```
1501.     COCHRAN        15 JULY        1981        IN NATIVE

                         NUMBER OF PLOTS = 20
                           PLOT SIZE 1X1
PLANT     PLANT     AVE.     1X1      TOTAL      AVE.     WGT./     LBS     KGS
CODE      NAME      PER-     ABS.     WGT.       WGT.     UNIT      PER     PER
                    CENT     PLOT     GMS/20     /PLOT    COVER     ACRE    HA.
                    COVER    FREQ.    SQ.FT.     OCCUR-   AREA
                    AREA     BASE                RENCES
                             20
*****************************************************************************
    6   SHRUBS
          ARTR      13.16       9.
          OPPO        .05       1.
    3   PER GRASS
          AGSM        .56      17.    18.49       .92     1.65    88.78     99.52
          POSE       2.20      20.     6.31       .32      .14    30.29     33.96
          SIHY        .10       2.     1.19       .06      .60     5.71      6.40
                    TOTAL PERENNIAL GRASS PRODUCTION = 124.78   139.88
    2   PER FORBS
          ALTE        .01       2.
                PERENNIAL FORBS =      1.24       .06     6.20     5.95      6.67
    5   ANN GRASS
          BRTE        .07      12.
          VUOC        .07      10.
                 ANNUAL GRASSES =      3.98       .20     1.33    19.11     21.42
    4   ANN FORBS
          CUPA2       .01       2.
          DEPI        .04       8.
          LEDE        .01       1.
          MIGR        .02       3.
          PLPA        .08      13.
                   ANNUAL FORBS =      1.58       .08      .51     7.58      8.50

          ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 157.42   176.47


    PRECIPITATION DATA              PRODUCTION ESTIMATES OF SHRUBS
     RAIN GAUGE                     AND WOODY MAT FORM PLANTS
    ***********************         *********************************
     OCT 15 TP APR 15 =  4.34         ARTR               300.25    336.58
     APR 15 TO JULY 1 =  4.70         OPPO                21.31     23.89
     JULY 1 TO SEPT 1 =  1.70         PHHO                 1.00      1.12
     SEPT 1 TO OCT 15 =  1.30
     SEASON LONG TOTAL= 12.04
     LONG TERM AVERAGE= 10.32

                        TOTAL SHRUB PRODUCTION =  322.56   361.59


                             TOTAL PRODUCTION =  479.98   538.06
                             **************************************
```

```
 1501.     COCHRAN      15 JULY        1981      OUT NATIVE

                         NUMBER OF PLOTS = 20
                            PLOT SIZE 1X1
PLANT    PLANT    AVE.     1X1     TOTAL    AVE.     WGT./    LBS     KGS
CODE     NAME     PER-     ABS.    WGT.     WGT.     UNIT     PER     PER
                  CENT     PLOT    GMS/20   /PLOT    COVER    ACRE    HA.
                  COVER    FREQ.   SQ.FT.   OCCUR-   AREA
                  AREA     BASE             RENCES
                           20
**********************************************************************************
  6   SHRUBS
        ARTR       12.11     10.
        OPPO         .25      1.
  3   PER GRASS
        AGSM        1.76     19.    34.08     1.70      .97 183.64   183.44
        BOGR         .13      1.      .24      .01      .10   1.15     1.29
        POSE        1.50     18.     7.76      .39      .26  37.26    41.77
        SIHY         .05      1.      .53      .03      .53   2.54     2.85
                  TOTAL PERENNIAL GRASS PRODUCTION = 204.59  229.35
  2   PER FORBS
        ALTE         .01      1.
              PERENNIAL FORBS =       .03      .00      .30    .14      .16
  5   ANN GRASS
        BRTE         .07     13.
        VUOC         .08     12.
                 ANNUAL GRASSES =    7.08      .35     2.28  33.99    38.10
  4   ANN FORBS
        CUPA2        .01      2.
        DEPI         .03      6.
        LARE         .02      4.
        LEDE         .03      5.
        PLPA         .10     14.
                   ANNUAL FORBS =    3.44      .17      .93  16.51    18.51

           ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 255.23  286.11


  PRECIPITATION DATA                   PRODUCTION ESTIMATES OF SHRUBS
  RAIN GAUGE                           AND WOODY MAT FORM PLANTS
 ***********************               ******************************
  OCT 15 TP APR 15 =  4.34                ARTR             264.33  296.32
  APR 15 TO JULY 1 =  4.70                OPPO               7.38    8.28
  JULY 1 TO SEPT 1 =  1.70                PHHO               5.82    6.52
  SEPT 1 TO OCT 15 =  1.30
  SEASON LONG TOTAL= 12.04
  LONG TERM AVERAGE= 10.32

                          TOTAL SHRUB PRODUCTION =  277.53  311.11


                                TOTAL PRODUCTION =  532.76  597.23
                                ***********************************
 1501.     COCHRAN      15 JULY        1982       OUT SPRAY

                           NUMBER OF PLOTS = 20
                             PLOT SIZE 1X1
PLANT    PLANT    AVE.    1X1      TOTAL     AVE.    WGT./     LBS    KGS
CODE     NAME     PER-    ABS.     WGT.      WGT.    UNIT      PER    PER
                  CENT    PLOT     GMS/20    /PLOT   COVER     ACRE   HA.
                  COVER   FREQ.    SQ.FT.    OCCUR-  AREA
                  AREA    BASE               RENCES
                          20
**********************************************************************
   6   SHRUBS
         ARTR        .11       3.
   3   PER GRASS
         AGSM       2.39      20.    56.39      2.82      1.18  270.76   303.52
         PUSE       2.25      20.     8.68       .43       .19   41.67    46.71
         STCO        .22       5.     2.95       .15       .67   14.16    15.87
                  TOTAL PERENNIAL GRASS PRODUCTION = 326.59  366.11
   5   ANN GRASS
         BRTE        .12     17.
         VUOC        .14     15.
               ANNUAL GRASSES =  13.14       .66     2.58   63.09    70.72
   4   ANN FORBS
         CAMI        .02       4.
         LARE        .04       7.
         LEDE        .10      16.
         PLPA        .13      17.
                 ANNUAL FORBS =  10.01       .50     1.73   48.06    53.88

            ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 437.74  490.71


     PRECIPITATION DATA                   PRODUCTION ESTIMATES OF SHRUBS
     RAIN GAUGE                           AND WOODY MAT FORM PLANTS
   *************************              **********************************
    OCT 15 TP APR 15 =  4.34                ARTR                46.77    52.43
    APR 15 TO JULY 1 =  4.70                OPPO                 3.99     4.47
    JULY 1 TO SEPT 1 =  1.70
    SEPT 1 TO OCT 15 =  1.30
    SEASON LONG TOTAL= 12.04
    LONG TERM AVERAGE= 10.32

                           TOTAL SHRUB PRODUCTION =     50.77    56.91


                                  TOTAL PRODUCTION =  488.51  547.61
                                  *************************************
```

```
1981.     CUMB 1        6 AUGUST      1981       IN NATIVE

                        NUMBER OF PLOTS = 20
                          PLOT SIZE 1X1
PLANT    PLANT     AVE.    1X1     TOTAL    AVE.    WGT./    LBS    KGS
CODE     NAME      PER-    ABS.    WGT.     WGT.    UNIT     PER    PER
                   CENT    PLOT    GMS/20   /PLOT   COVER    ACRE   HA.
                   COVER   FREQ.   SQ.FT.   OCCUR-  AREA
                   AREA    BASE             RENCES
                           20
*****************************************************************************
  6   SHRUBS
        ARTR        16.90      7.
        ATCO          .10      1.
        ATGA          .25      2.      .33      .02      .07    1.58     1.77
        CHVI          .08      3.
        PHHO          .22      1.
        SAVE         8.80      4.
  3   PER GRASS
        AGSM          .94     16.    18.75      .94     1.00   90.03   100.92
        POSE          .12      4.     2.73      .14     1.14   13.10    14.69
        SIHY          .38      3.     3.53      .18      .47   16.94    18.99
                   TOTAL PERENNIAL GRASS PRODUCTION = 120.07   134.60
  2   PER FORBS
        PHLO          .07      7.
              PERENNIAL FORBS =    4.66      .23     3.11   22.37    25.08
  4   ANN FORBS
        DEPI          .01      1.
                  ANNUAL FORBS =    .09      .00      .45     .43      .48

           ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 144.45   161.93


      PRECIPITATION DATA                  PRODUCTION ESTIMATES OF SHRUBS
      RAIN GAUGE                          AND WOODY MAT FORM PLANTS
    ***********************               *********************************
     OCT 15 TP APR 15 =  2.25               ARTR               348.07   390.19
     APR 15 TO JULY 1 =  2.87               CELA                  .01      .01
     JULY 1 TO SEPT 1 =   .35               CHVI                40.51    45.42
     SEPT 1 TO OCT 15 =   .74               PHHO                25.24    28.29
     SEASON LONG TOTAL=  6.21               SAVE               290.83   326.02
     LONG TERM AVERAGE=  7.80               TESP                 1.53     1.72

                            TOTAL SHRUB PRODUCTION =   706.20   791.65



                                  TOTAL PRODUCTION =   850.65   953.57
                                  *************************************
```

```
1901.     COMB 1        6 AUGUST      1981      CUT NATIVE

                         NUMBER OF PLOTS = 20
                           PLOT SIZE 1X1
PLANT    PLANT    AVE.     1X1      TOTAL    AVE.     WGT./    LBS     KGS
CODE     NAME     PER-     ABS.     WGT.     WGT.     UNIT     PER     PER
                  CENT     PLOT     GMS/20   /PLOT    COVER    ACRE    HA.
                  COVER    FREQ.    SQ.FT.   OCCUR-   AREA
                  AREA     BASE              RENCES
                           20
*******************************************************************************
   6  SHRUBS
        ARTR       1.25       1.
        ATGA       5.15       8.    29.63     1.46      .29  142.27   159.48
        CHVI       3.90       4.
        SAVE       3.70       3.
        TESP       3.50       3.
   3  PER GRASS
        AGSM        .22       4.     3.42      .17      .80   16.42    18.41
        POSE       2.38       4.     3.13      .16      .05   15.02    16.84
        SIHY        .31      11.     5.03      .25      .61   24.15    27.07
                  TOTAL PERENNIAL  GRASS PRODUCTION =         55.59    62.32
   2  PER FORBS
        PHLO        .01       1.
               PERENNIAL FORBS =      .08      .00      .40     .38      .43
   4  ANN FORBS
        CHAL        .01       1.
                  ANNUAL FORBS =      .11      .01      .55     .52      .58

          ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION =  198.76  222.81


    PRECIPITATION DATA                  PRODUCTION ESTIMATES OF SHRUBS
    RAIN GAUGE                          AND WOODY MAT FORM PLANTS
    **********************              *******************************
    OCT 15 TP APR 15 =  2.25              ARTR               210.45   235.92
    APR 15 TO JULY 1 =  2.87              ATCO                 2.78     3.11
    JULY 1 TO SEPT 1 =   .35              CHVI                55.75    62.49
    SEPT 1 TO OCT 15 =   .74              OPPO                 1.26     1.41
    SEASON LONG TOTAL=  6.21              PHHO                  .69      .78
    LONG TERM AVERAGE=  7.80              SAVE                67.93    76.14

                            TOTAL SHRUB PRODUCTION =   338.86   379.86


                                 TOTAL PRODUCTION =   537.62   602.67
                                 **********************************
```

```
 1901.    CUMB 1        5 AUGUST      1981       IN SPRAY

                        NUMBER OF PLOTS = 20
                           PLOT SIZE 1X1
PLANT    PLANT     AVE.    1X1     TOTAL     AVE.     WGT./    LBS      KGS
CODE     NAME      PER-    ABS.    WGT.      WGT.     UNIT     PER      PER
                   CENT    PLOT    GMS/20    /PLOT    COVER    ACRE     HA.
                   COVER   FREQ.   SQ.FT.    OCCUR-   AREA
                   AREA    BASE              RENCES
                           20
**********************************************************************
   0   SHRUBS
         CHVI        1.10      2.
         SAVE         .01      1.
   3   PER GRASS
         AGSM        1.30     17.   60.62     3.03     2.33 291.07  326.29
         POSE        1.47     11.   23.15     1.16      .79 111.15  124.60
         SIHY         .53      2.   13.37      .67     1.27  64.19   71.96
                   TOTAL PERENNIAL GRASS PRODUCTION = 466.41  522.85
   2   PER FORBS
         LERE         .04      3.
         PHLO         .01      1.
             PERENNIAL FORBS =      .16      .01      .18     .76      .85

           ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 467.17  523.70


     PRECIPITATION DATA                 PRODUCTION ESTIMATES OF SHRUBS
     RAIN GAUGE                         AND WOODY MAT FORM PLANTS
   ***********************              ******************************
    OCT 15 TP APR 15 =   2.25              ARTR              24.21   27.14
    APR 15 TO JULY 1 =   2.87              CHVI               5.76    6.46
    JULY 1 TO SEPT 1 =    .35              PHHO                .69     .78
    SEPT 1 TO OCT 15 =    .74              SAVE             152.25  170.67
    SEASON LONG TOTAL=   6.21
    LONG TERM AVERAGE=   7.80

                          TOTAL SHRUB PRODUCTION =  182.91  205.04



                                   TOTAL PRODUCTION =  650.08  728.74
                                   ******************************
```

```
1961.    CUMB 1          5 AUGUST       1961      OUT SPRAY

                      NUMBER OF PLOTS = 20
                         PLOT SIZE 1X1
PLANT   PLANT    AVE.    1X1     TOTAL    AVE.    WGT./    LBS    KGS
CODE    NAME     PER-    ABS.    WGT.     WGT.    UNIT     PER    PER
                 CENT    PLOT    GMS/20   /PLOT   COVER    ACRE   HA.
                 COVER   FREQ.   SQ.FT.   OCCUR-  AREA
                 AREA    BASE             RENCES
                         20
*****************************************************************************
  6  SHRUBS
       ATGA       1.55      2.  12.74      .64      .41  61.17   68.57
       CHVI        .28      3.
       SAVE       1.70      3.
  3  PER GRASS
       AGSM        .98     19.  27.34     1.37     1.39 131.27  147.15
       POSE        .13      5.   1.39      .07      .53   6.67    7.48
       SIHY        .10      1.    .13      .01      .07    .62     .70
               TOTAL PERENNIAL GRASS PRODUCTION = 138.56  155.33
  4  ANN FORBS
       LARE        .03      2.
             ANNUAL FORBS =       .15      .01      .30    .72     .81

          ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 200.45  224.70


   PRECIPITATION DATA               PRODUCTION ESTIMATES OF SHRUBS
   RAIN GAUGE                       AND WOODY MAT FORM PLANTS
  ************************          **********************************
   OCT 15 TP APR 15 =  2.25            ARTR             10.24   11.48
   APR 15 TO JULY 1 =  2.87            CHVI             13.74   15.40
   JULY 1 TO SEPT 1 =   .35            SAVE             91.74  102.84
   SEPT 1 TO OCT 15 =   .74
   SEASON LONG TOTAL=  6.21
   LONG TERM AVERAGE=  7.80

                          TOTAL SHRUB PRODUCTION =  115.72  129.73


                                TOTAL PRODUCTION =  316.17  354.43
                                ************************************
```

```
1201.     CUMB 2          5 AUGUST      1981      IN NATIVE

                         NUMBER OF PLOTS = 20
                             PLOT SIZE 1X1
PLANT    PLANT     AVE.     1X1     TOTAL     AVE.     WGT./    LBS     KGS
CODE     NAME      PER-     ABS.    WGT.      WGT.     UNIT     PER     PER
                   CENT     PLOT    GMS/20    /PLOT    COVER    ACRE    HA.
                   COVER    FREQ.   SQ.FT.    OCCUR-   AREA
                   AREA     BASE              RENCES
                            20
*****************************************************************************
  6   SHRUBS
         ARLO        5.90     11.
         CHVI        6.12     13.
         TECA         .10      1.
  3   PER GRASS
         POFE         .62     11.    24.86     1.24     1.52  119.37   133.81
         AGSM         .47     15.    12.63      .63     1.34   60.64    67.98
                   TOTAL PERENNIAL GRASS PRODUCTION =  180.01   201.79
  2   PER FORBS
         COPA         .01      1.
         LILE         .54      3.
         MELO         .15      5.
         PHLO         .34      8.
               PERENNIAL FORBS =     30.29     1.51     1.47  145.44   163.04

           ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION =  325.45   364.83


    PRECIPITATION DATA
    RAIN GAUGE
  ***********************
    OCT 15 TP APR 15 =  2.40
    APR 15 TO JULY 1 =  2.06
    JULY 1 TO SEPT 1 =   .71
    SEPT 1 TO OCT 15 =   .77
    SEASON LONG TOTAL=  5.94
    LONG TERM AVERAGE=  9.19
```

```
*************************************
ARTR   Shrub production estimates
CHVI   were not obtained.
TECA
```

```
1201.    CUMB 2          5 AUGUST       1981      OUT NATIVE

                    NUMBER OF PLOTS = 20
                       PLOT SIZE 1X1
PLANT    PLANT    AVE.    1X1      TOTAL    AVE.     WGT./    LBS     KGS
CODE     NAME     PER-    ABS.     WGT.     WGT.     UNIT     PER     PER
                  CENT    PLOT     GMS/20   /PLOT    COVER    ACRE    HA.
                  COVER   FREQ.    SQ.FT.   OCCUR-   AREA
                  AREA    BASE              RENCES
                          20
****************************************************************************
  6  SHRUBS
       ARLO        4.17      14.
       CHVI        1.40       3.
       ERMI         .14       4.
       ERFL         .05       3.
  3  PER GRASS
       AGSM         .78      18.    10.76     .54      .69    51.66    57.91
       POFE        1.62      20.    19.20     .96      .59    92.19   103.34
                TOTAL PERENNIAL GRASS PRODUCTION = 143.85   161.26
  2  PER FORBS
       COPA         .02       1.
       MELO         .14       7.
       PHLO         .34      12.
       PHMU         .15       1.
       TRGY         .03       3.
            PERENNIAL FORBS =      6.17     .31      .46    29.62    33.20

     ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 173.47   194.46


  PRECIPITATION DATA
  RAIN GAUGE
***********************
  OCT 15 TP APR 15 =  2.40
  APR 15 TO JULY 1 =  2.06
  JULY 1 TO SEPT 1 =   .71
  SEPT 1 TO OCT 15 =   .77
  SEASON LONG TOTAL=  5.94
  LONG TERM AVERAGE=  9.19
```

```
*************************************
ARLO  Shrub production estimates
ARTR  were not obtained.
CHVI
PHHO
TECA
```

```
1201.     CUMB 2          5 AUGUST        1981       IN SPRAY

                        NUMBER OF PLOTS = 20
                          PLOT SIZE 1X1
LANT    PLANT    AVE.     1X1      TOTAL     AVE.     WGT./     LBS     KGS
ODE     NAME     PER-     ABS.     WGT.      WGT.     UNIT      PER     PER
                 CENT     PLOT     GMS/20    /PLOT    COVER     ACRE    HA.
                 COVER    FREQ.    SQ.FT.    OCCUR-   AREA
                 AREA     BASE               RENCES
                          20
**************************************************************************
  6   SHRUBS
       CHVI        .45      3.
  3   PER GRASS
       AGSM        .85     15.    34.87     1.74    2.05  167.43   187.69
       POFE       8.77     19.    99.39     4.97     .57  477.23   534.97
                 TOTAL PERENNIAL GRASS PRODUCTION = 644.66   722.66
  2   PER FORBS
       LILE        .14      5.
       PHLO        .14     10.
       TRGY        .01      2.
            PERENNIAL FORBS =    12.63      .63    2.22   60.64    67.98

          ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 705.30   790.64


   PRECIPITATION DATA
   RAIN GAUGE
  ************************                   ***************************************
   OCT 15 TP APR 15 =   2.40                 ARLO  Shrub production estimates
   APR 15 TO JULY 1 =   2.06                 ARTR  were not obtained.
   JULY 1 TO SEPT 1 =    .71                 CHVI
   SEPT 1 TO OCT 15 =    .77                 PHHO
   SEASON LONG TOTAL=   5.94                 TECA
   LONG TERM AVERAGE=   9.19
```

```
1201.     CUMB 2          5 AUGUST       1981      OUT SPRAY

                        NUMBER OF PLOTS = 20
                           PLOT SIZE 1X1
 PLANT     PLANT    AVE.   1X1     TOTAL     AVE.    WGT./   LBS    KGS
 CODE      NAME     PER-   ABS.    WGT.      WGT.    UNIT    PER    PER
                    CENT   PLOT    GMS/20    /PLOT   COVER   ACRE   HA.
                    COVER  FREQ.   SQ.FT.    OCCUR-  AREA
                    AREA   BASE              RENCES
                           20
******************************************************************************
    6  SHRUBS
         ARTR        .30       1.
         CHVI       1.55       6.
    3  PER GRASS
         AGSM        .73      19.   11.79     .59     .80   56.61    63.46
         POFE        .84       7.    5.40     .27     .32   25.92    29.06
         POSE      12.64      14.   10.39     .52     .04   49.88    55.92
                  TOTAL PERENNIAL GRASS PRODUCTION = 132.41  148.43
    2  PER FORBS
         PHLO        .14      15.
               PERENNIAL FORBS =    2.93     .15    1.05   14.06    15.76
    4  ANN FORBS
         LARE        .01       1.
         LEDE        .04       4.
                 ANNUAL FORBS =      .52     .03     .58    2.49     2.79

          ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 148.96   166.98


     PRECIPITATION DATA
     RAIN GAUGE
   ***********************
   OCT 15 TP APR 15 =  2.40
   APR 15 TO JULY 1 =  2.06
   JULY 1 TO SEPT 1 =   .71
   SEPT 1 TO OCT 15 =   .77
   SEASON LONG TOTAL=  5.95
   LONG TERM AVERAGE=  9.19
```

```
*************************************
ARLO  Shrub production estimates
ARTR  were not obtained
CHVI
PHHO
TECA
```

```
1202.     CUMBER 3     4 AUGUST     1981     IN NATIVE

                    NUMBER OF PLOTS = 20
                      PLOT SIZE 1X1
PLANT   PLANT    AVE.    1X1     TOTAL    AVE.     WGT./    LBS     KGS
CODE    NAME     PER-    ABS.    WGT.     WGT.     UNIT     PER     PER
                 CENT    PLOT    GMS/20   /PLOT    COVER    ACRE    HA.
                 COVER   FREQ.   SQ.FT.   OCCUR-   AREA
                 AREA    BASE             RENCES
                         20
************************************************************************
 6   SHRUBS
       ARTR     12.53      9.
       CHVI      2.07      7.
       ERMI       .05      3.
       PHHO       .[illegible]0      3.
       TECA       .04      1.
 3   PER GRASS
       AGSM       .58     14.   12.58      .63     1.09   60.40    67.71
       AGSP       .25      3.    9.34      .47     1.87   44.84    50.27
       POFE      1.17     10.   27.25     1.36     1.16  130.84   146.67
       POSE       .69      9.    6.78      .34      .49   32.55    36.49
       SIHY       .07      2.     .60      .03      .46    2.88     3.23
                TOTAL PERENNIAL GRASS PRODUCTION =      271.51   304.36
 2   PER FORBS
       ASMI       .38      6.
       PHLO       .20     12.
       TRGY       .04      4.
            PERENNIAL FORBS =    8.29      .41      .68   39.80    44.62

          ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION =      311.31   348.98



    PRECIPITATION DATA                 PRODUCTION ESTIMATES OF SHRUBS
    RAIN GAUGE                         AND WOODY MAT FORM PLANTS
    ***********************            ********************************
    OCT 15 TP APR 15 = 3.00            ANO1               1.93     2.17
    APR 15 TO JULY 1 = 3.00            ARTR             240.23   269.30
    JULY 1 TO SEPT 1 = 1.00            CHVI              15.95    17.88
    SEPT 1 TO OCT 15 =  .70            ERMI               3.16     3.54
    SEASON LONG TOTAL= 7.70            PHHO              36.92    41.38
    LONG TERM AVERAGE= 10.87           TECA               3.96     4.44

                          TOTAL SHRUB PRODUCTION =      302.16   338.73


                                TOTAL PRODUCTION =      613.47   687.70
                                **************************************
 1202.     CUMBER 3     4 AUGUST      1981       OUT NATIV

                            NUMBER OF PLOTS = 20
                              PLOT SIZE 1X1
PLANT    PLANT    AVE.    1X1     TOTAL    AVE.    WGT./    LBS   KGS
CODE     NAME     PER-    ABS.    WGT.     WGT.    UNIT     PER   PER
                  CENT    PLOT    GMS/20   /PLOT   COVER    ACRE  HA.
                  COVER   FREQ.   SQ.FT.   OCCUR-  AREA
                  AREA    BASE             RENCES
                          20
*****************************************************************************
  6   SHRUBS
        ARTR      19.80      11.
        CHVI       1.73      10.
        ERMI        .58       4.
        PHHO        .65       7.
  3   PER GRASS
        AGSM        .75      15.   16.45      .82     1.09    78.98    88.54
        AGSP        .49       6.   18.40      .92     1.88    88.35    99.04
        POFE        .32       4.    5.46      .27      .87    26.31    29.49
        POSE       1.09      13.   10.65      .53      .49    51.13    57.32
        SIHY        .12       3.     .98      .05      .43     4.70     5.27
                TOTAL PERENNIAL GRASS PRODUCTION =  249.47   279.66
  2   PER FORBS
        ARHO2       .01       1.
        PHLO        .04       5.
        TRGY        .05       5.
              PERENNIAL FORBS =    1.10       .06      .61     5.28     5.92

          ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION =  254.75   285.57


    PRECIPITATION DATA                     PRODUCTION ESTIMATES OF SHRUBS
    RAIN GAUGE                             AND WOODY MAT FORM PLANTS
    **********************                 ******************************
    OCT 15 TP APR 15 =    3.00              ANDI                .97     1.08
    APR 15 TO JULY 1 =    3.00              ARTR             319.75   358.44
    JULY 1 TO SEPT 1 =    1.00              CELA               1.05     1.17
    SEPT 1 TO OCT 15 =     .70              CHVI              86.49    96.96
    SEASON LONG TOTAL=    7.70              ERMI               9.01    10.10
    LONG TERM AVERAGE=    10.87             PHHO              32.21    36.11

                              TOTAL SHRUB PRODUCTION =  449.47   503.85


                                   TOTAL PRODUCTION =  704.22   789.43
                                   **********************************
 1202.     CUMBER 3    4 AUGUST    1981      IN SPRAY

                   NUMBER OF PLOTS = 20
                    PLOT SIZE 1X1
PLANT    PLANT     AVE.    1X1     TOTAL     AVE.     WGT./    LBS      KGS
CODE     NAME      PER-    ABS.    WGT.      WGT.     UNIT     PER      PER
                   CENT    PLOT    GMS/20    /PLOT    COVER    ACRE     HA.
                   COVER   FREQ.   SQ.FT.    OCCUR-   AREA
                   AREA    BASE              RENCES
                           20
*******************************************************************************
  6  SHRUBS
       CHVI        3.20      3.
       PHHO         .10      1.
  3  PER GRASS
       AGSM        1.05      5.     27.04      1.35     1.29   129.83   145.54
       AGSP        1.79     12.     66.74      3.34     1.67   320.46   359.24
       POFE        4.48     14.     67.44      3.37      .75   323.82   363.00
       POSE         .36      6.      2.23       .11      .29    10.70    11.99
                   TOTAL PERENNIAL GRASS PRODUCTION =          784.81   879.77
  2  PER FORBS
       LOSI         .03      2.
       PHLO         .10      8.
       TRGY         .06      6.
       UNKN         .05      3.
              PERENNIAL FORBS =      9.41       .47     2.14    45.18    50.65

           ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION =            829.99   930.42


  PRECIPITATION DATA                          PRODUCTION ESTIMATES OF SHRUBS
  RAIN GAUGE                                  AND WOODY MAT FORM PLANTS
*************************                     *******************************
 OCT 15 TP APR 15 =    3.00                    ANDI                1.26     1.42
 APR 15 TO JULY 1 =    3.00                    ARTR               30.11    33.76
 JULY 1 TO SEPT 1 =    1.00                    CHVI               35.00    39.24
 SEPT 1 TO OCT 15 =     .70                    ERMI                5.11     5.73
 SEASON LONG TOTAL=    7.70                    PHHO                7.61     8.53
 LONG TERM AVERAGE=   10.87                    TECA               30.13    33.78

                         TOTAL SHRUB PRODUCTION =                109.23   122.44


                                TOTAL PRODUCTION =               939.22  1052.86
                                *************************************
```

```
   1202.     CUMBER 3     4 AUGUST     1981      OUT SPRAY

                      NUMBER OF PLOTS = 20
                        PLOT SIZE 1X1
 PLANT   PLANT   AVE.   1X1    TOTAL    AVE.   WGT./   LBS   KGS
 CODE    NAME    PER-   ABS.   WGT.     WGT.   UNIT    PER   PER
                 CENT   PLOT   GMS/20   /PLOT  COVER   ACRE  HA.
                 COVER  FREQ.  SQ.FT.   OCCUR- AREA
                 AREA   BASE            RENCES
                        20
*************************************************************************
    6  SHRUBS
         ARTR       .04     2.
         CHVI       .42     5.
         ERMI       .42     3.
         PHHO       .03     1.
         TECA      1.75     1.
    3  PER GRASS
         AGSM       .68    11.  10.98    .55     .81  52.72   59.10
         AGSP      1.43    10.  20.61   1.03     .72  98.96  110.93
         POFE      1.00    12.  27.95   1.40    1.40 134.20  150.44
         POSE       .76     9.   4.88    .24     .32  23.43   26.27
         STCO       .13     2.   3.46    .17    1.38  16.61   18.62
         STVI       .05     1.   1.92    .10    2.13   9.21   10.32
                 TOTAL PERENNIAL GRASS PRODUCTION = 335.13  375.68
    2  PER FORBS
         PHLO       .41    10.
         TRGY       .05     1.
             PERENNIAL FORBS =   1.82    .09     .20   8.73    9.79

           ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 343.86  385.47


      PRECIPITATION DATA               PRODUCTION ESTIMATES OF SHRUBS
      RAIN GAUGE                       AND WOODY MAT FORM PLANTS
    ***********************            *******************************
     OCT 15 TP APR 15 = 3.00           ANDI            1.84    2.06
     APR 15 TO JULY 1 = 3.00           ARTR          109.12  122.32
     JULY 1 TO SEPT 1 = 1.00           CHVI           35.63   39.94
     SEPT 1 TO OCT 15 =  .70           ERMI            2.30    2.58
     SEASON LONG TOTAL= 7.70           PHHO            4.83    5.42
     LONG TERM AVERAGE=10.87           TECA           21.81   24.44

                          TOTAL SHRUB PRODUCTION =   175.53  196.76


                                 TOTAL PRODUCTION =  519.39  582.23
                                 **********************************
```

```
1902.    CUMB 4        5 AUGUST     1981      IN NATIVE

                      NUMBER OF PLOTS = 20
                         PLOT SIZE 1X1
PLANT    PLANT    AVE.   1X1    TOTAL   AVE.    WGT./   LBS    KGS
CODE     NAME     PER-   ABS.   WGT.    WGT.    UNIT    PER    PER
                  CENT   PLOT   GMS/20  /PLOT   COVER   ACRE   HA.
                  COVER  FREQ.  SQ.FT.  OCCUR-  AREA
                  AREA   BASE           RENCES
                         20
**************************************************************************
  6  SHRUBS
       ARLO        .10      1.
       ARSP        .52      3.
       ATGA        .03      1.      .30     .02     .60    1.44     1.61
       CELA        .85      8.
  3  PER GRASS
       AGSM       2.03     20.    65.08    3.25    1.61  312.49   350.30
       POSE        .15      1.      .96     .05     .32    4.60     5.16
       SIHY        .03      1.      .33     .02     .66    1.58     1.77

       ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 320.11  358.84



  PRECIPITATION DATA                   PRODUCTION ESTIMATES OF SHRUBS
  RAIN GAUGE                           AND WOODY MAT FORM PLANTS
************************               ********************************
 OCT 15 TP APR 15 = 2.50                CELA               32.08   35.96
 APR 15 TO JULY 1 = 2.45                PHHO               24.69   27.67
 JULY 1 TO SEPT 1 =  .35                TESP               17.35   19.45
 SEPT 1 TO OCT 15 =  .48
 SEASON LONG TOTAL= 5.78
 LONG TERM AVERAGE= 8.09

                          TOTAL SHRUB PRODUCTION =      74.11   83.08



                                 TOTAL PRODUCTION =  394.22  441.92
                                 *********************************
 1902.    CUMB 4         5 AUGUST       1981         OUT NATIVE

                         NUMBER OF PLOTS = 20
                         PLOT SIZE 1X1
PLANT    PLANT    AVE.   1X1     TOTAL    AVE.    WGT./   LBS    KGS
CODE     NAME     PER-   ABS.    WGT.     WGT.    UNIT    PER    PER
                  CENT   PLOT    GMS/20   /PLOT   COVER   ACRE   HA.
                  COVER  FREQ.   SQ.FT.   OCCUR-  AREA
                  AREA   BASE             RENCES
                         20
*************************************************************************
   6  SHRUBS
        ATGA        .15     1.     .45     .02     .15   2.16     2.42
        CELA       1.89    10.
        PHHO        .95     6.
   3  PER GRASS
        AGSM        .68    13.   27.70    1.39    2.04 133.00   149.09
        POSE        .03     1.     .15     .01     .25    .72      .81
        SIHY        .28     3.    1.80     .09     .32   8.64     9.69
                  TOTAL PERENNIAL GRASS PRODUCTION = 142.36   159.59
   4  ANN FORBS
        DEPI        .01     1.
                 ANNUAL FORBS =    .44     .02    4.40   2.11     2.37

              ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 146.63   164.37


  PRECIPITATION DATA                  PRODUCTION ESTIMATES OF SHRUBS
  RAIN GAUGE                          AND WOODY MAT FORM PLANTS
**********************                *******************************
 OCT 15 TP APR 15 =  2.40                CELA             42.89    48.08
 APR 15 TO JULY 1 =  2.45                CHVI              2.69     3.01
 JULY 1 TO SEPT 1 =   .35                PHHO              2.91     3.26
 SEPT 1 TO OCT 15 =   .48                TESP             75.91    85.09
 SEASON LONG TOTAL=  5.78
 LONG TERM AVERAGE=  8.09

                          TOTAL SHRUB PRODUCTION =  124.40   139.45


                               TOTAL PRODUCTION =  271.03   303.82
                               ***********************************
```

```
2004.    DEMER           21 JULY          1981         IN NATIVE

                         NUMBER OF PLOTS = 20
                           PLOT SIZE 1X1
LANT     PLANT     AVE.    1X1     TOTAL     AVE.     WGT./    LBS     KGS
ODE      NAME      PER-    ABS.    WGT.      WGT.     UNIT     PER     PER
                   CENT    PLOT    GMS/20    /PLOT    COVER    ACRE    HA.
                   COVER   FREQ.   SQ.FT.    OCCUR-   AREA
                   AREA    BASE              RENCES
                           20
*************************************************************************
  6   SHRUBS
        ARTR      17.00        9.
        OPPO        .95        3.
  3   PER GRASS
        AGSM        .71       17.   26.50     1.33     1.87 127.24   142.64
        BOGR        .10        1.     .66      .03      .33   3.16     3.54
        POSE        .37       15.   2.74       .14      .38  13.15    14.74
        SIHY        .09        2.     .66      .03      .37   3.16     3.54
                  TOTAL PERENNIAL GRASS PRODUCTION = 146.71   164.46
  5   ANN GRASS
        BRTE        .04        2.
              ANNUAL GRASSES =        .26      .01      .37   1.24     1.39
  4   ANN FORBS
        LEDE        .02        2.
        PLPA        .01        1.
        UNKN        .01        2.
                ANNUAL FORBS =        .28      .01      .47   1.34     1.50

           ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 149.29   167.35


 PRECIPITATION DATA                  PRODUCTION ESTIMATES OF SHRUBS
 RAIN GAUGE                          AND WOODY MAT FORM PLANTS
***********************              *******************************
 OCT 15 TP APR 15 = 3.82               ARTR              455.77  510.92
 APR 15 TO JULY 1 = 4.15               OPPO               14.19   15.91
 JULY 1 TO SEPT 1 = 1.05
 SEPT 1 TO OCT 15 = 1.05
 SEASON LONG TOTAL=10.07
 LONG TERM AVERAGE= 8.54

                        TOTAL SHRUB PRODUCTION =  469.96  526.83


                              TOTAL PRODUCTION =  619.25  694.18
                              ************************************
```

```
2004.    DEMER        21 JULY        1981       CUT NATIVE

                       NUMBER OF PLOTS = 20
                       PLOT SIZE 1X1
PLANT    PLANT    AVE.    1X1     TOTAL    AVE.     WGT./    LBS      KGS
CODE     NAME     PER-    ABS.    WGT.     WGT.     UNIT     PER      PER
                  CENT    PLOT    GMS/20   /PLOT    COVER    ACRE     HA.
                  COVER   FREQ.   SQ.FT.   OCCUR-   AREA
                  AREA    BASE             RENCES
                          20
*************************************************************************
   6   SHRUBS
         ARTR      11.53     12.
         OPPO        .80      4.
   3   PER GRASS
         BOGR        .83      5.     2.66     .13      .16    12.77     14.32
         POSE        .45     12.     4.98     .25      .55    23.91     26.80
         SIHY        .05      3.     4.25     .21     4.72    20.40     22.87
                  TOTAL PERENNIAL GRASS PRODUCTION =          57.06     63.99
   4   ANN FORBS
         DEPI        .01      1.
         PLPA        .01      2.
                 ANNUAL FORBS =       .11      .01      .37      .52       .58

            ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION =          57.60     64.57


   PRECIPITATION DATA                   PRODUCTION ESTIMATES OF SHRUBS
   RAIN GAUGE                           AND WOODY MAT FORM PLANTS
  ************************              *******************************
   OCT 15 TP APR 15 =  3.82               ARTR               508.49  570.02
   APR 15 TO JULY 1 =  4.15               OPPO                42.83   48.01
   JULY 1 TO SEPT 1 =  1.05
   SEPT 1 TO OCT 15 =  1.05
   SEASON LONG TOTAL= 10.07
   LONG TERM AVERAGE=  8.54

                              TOTAL SHRUB PRODUCTION =  551.32  618.03


                                    TOTAL PRODUCTION =  608.92  682.60
                                    ******************************************
  2005.    DUTCHNICK     22 JULY      1981     IN NATIVE

                    NUMBER OF PLOTS = 20
                      PLOT SIZE 1X1
PLANT  PLANT   AVE.   1X1   TOTAL   AVE.   WGT./  LBS   KGS
CODE   NAME    PER-   ABS.  WGT.    WGT.   UNIT   PER   PER
               CENT   PLOT  GMS/20  /PLOT  COVER  ACRE  HA.
               COVER  FREQ. SQ.FT.  OCCUR- AREA
               AREA   BASE          RENCES
                      20
******************************************************************
  6  SHRUBS
       OPPO      3.55    13.
  3  PER GRASS
       BOGR      5.90    17.  32.48   1.62    .28 155.95  174.82
       ORHY       .25     2.  19.47    .97   3.82  93.48  104.79
       SIHY       .01     1.    .26    .01   1.30   1.24    1.39
               TOTAL PERENNIAL GRASS PRODUCTION = 250.67  281.00
  4  ANN FORBS
       CHLE       .01     1.
       LEDE       .01     1.
              ANNUAL FORBS =   .07    .00    .23    .33     .37

          ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 251.00  281.37


    PRECIPITATION DATA              PRODUCTION ESTIMATES OF SHRUBS
    RAIN GAUGE                      AND WOODY MAT FORM PLANTS
    *********************            ****************************
    OCT 15 TP APR 15 = 2.09           CELA            10.49   11.75
    APR 15 TO JULY 1 = 4.73           OPPO            94.70  106.15
    JULY 1 TO SEPT 1 =  .89
    SEPT 1 TO OCT 15 =  .80
    SEASON LONG TOTAL= 8.51
    LONG TERM AVERAGE= 7.19

                       TOTAL SHRUB PRODUCTION =  105.18  117.91


                             TOTAL PRODUCTION =  356.18  399.28
                             ************************************
```

```
 2005.   DUTCHNICK       22 JULY         1981       OUT NATIVE

                   NUMBER OF PLOTS = 20
                      PLOT SIZE 1X1
PLANT    PLANT    AVE.    1X1     TOTAL    AVE.    WGT./    LBS    KGS
CODE     NAME     PER-    ABS.    WGT.     WGT.    UNIT     PER    PER
                  CENT    PLOT    GMS/20   /PLOT   COVER    ACRE   HA.
                  COVER   FREQ.   SQ.FT.   OCCUR-  AREA
                  AREA    BASE             RENCES
                          20
************************************************************************
   6  SHRUBS
        ARTR        .02       1.
        OPPO       3.43      10.
   3  PER GRASS
        BOGR       9.70      20.   42.51    2.13     .22 204.11  228.81
        POSE        .21       4.    1.60     .08     .38   7.68    8.61
                  TOTAL PERENNIAL GRASS PRODUCTION = 211.79  237.42
   4  ANN FORBS
        CHLE        .01       2.
        LEDE        .01       1.
                 ANNUAL FORBS =     .06      .00     .20    .28     .31

             ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 212.07  237.73


       PRECIPITATION DATA                PRODUCTION ESTIMATES OF SHRUBS
       RAIN GAUGE                        AND WOODY MAT FORM PLANTS
      ************************           **********************************
       OCT 15 TP APR 15 = 2.09             OPPO              57.12   64.04
       APR 15 TO JULY 1 = 4.73
       JULY 1 TO SEPT 1 =  .89
       SEPT 1 TO OCT 15 =  .80
       SEASON LONG TOTAL= 8.51
       LONG TERM AVERAGE= 7.19

                          TOTAL SHRUB PRODUCTION =   57.12   64.04


                               TOTAL PRODUCTION =  269.19  301.77
                               **********************************
```

```
404.    FARSON        6 AUGUST      1982        IN NATIVE

                      NUMBER OF PLOTS = 20
                       PLOT SIZE 1X1
LANT     PLANT    AVE.    1X1      TOTAL     AVE.    WGT./     LBS     KGS
CODE     NAME     PER-    ABS.     WGT.      WGT.    UNIT      PER     PER
                  CENT    PLOT     GMS/20    /PLOT   COVER     ACRE    HA.
                  COVER   FREQ.    SQ.FT.    OCCUR-  AREA
                  AREA    BASE               RENCES
                          20
*******************************************************************************
  6   SHRUBS
        ARHO         .10       1.
        ARTR       14.10      13.
        CHVI         .63       5.
        EROV         .08       3.
        PHHO        3.10      13.
  3   PER GRASS
        AGSM         .50      19.     9.26      .46       .92    44.46    49.84
        POSE         .06       3.      .46      .02       .42     2.20     2.47
        ORHY         .10       2.     1.96      .10      1.03     9.41    10.55
        SIHY         .06       3.      .46      .02       .42     2.20     2.47
                  TOTAL PERENNIAL GRASS PRODUCTION =              58.27    65.32
  4   ANN FORBS
        DEPI         .01       1.
                ANNUAL FORBS =         .09      .00       .90      .43      .48

           ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION =               58.70    65.80


   PRECIPITATION DATA                  PRODUCTION ESTIMATES OF SHRUBS
   RAIN GAUGE                          AND WOODY MAT FORM PLANTS
 ************************            **********************************
  OCT 15 TP APR 15 = 2.43                 ARTR              298.66  334.80
  APR 15 TO JULY 1 = 2.50                 CELA                 .57     .64
  JULY 1 TO SEPT 1 =  .79                 CHVI               13.37   14.98
  SEPT 1 TO OCT 15 = 1.29                 EROV                1.84    2.06
  SEASON LONG TOTAL= 7.01                 PHHO                7.33    8.22
  LONG TERM AVERAGE= 6.62                 OPPO               67.23   75.36

                           TOTAL SHRUB PRODUCTION =  369.00  436.07


                                 TOTAL PRODUCTION =  447.70  501.87
                                 **********************************
  404.   FARSON       6 AUGUST     1982      OUT NATIVE

                      NUMBER OF PLOTS = 20
                      PLOT SIZE 1X1
PLANT  PLANT  AVE.   1X1   TOTAL   AVE.   WGT./  LBS   KGS
CODE   NAME   PER-   ABS.  WGT.    WGT.   UNIT   PER   PER
              CENT   PLOT  GMS/20  /PLOT  COVER  ACRE  HA.
              COVER  FREQ. SQ.FT.  OCCUR- AREA
              AREA   BASE          RENCES
                     20
*****************************************************************
  6  SHRUBS
       ARTR    16.00   16.
       CHVI      .20    3.
       EROV      .01    1.
       OPPO      .04    1.
       PHHO      .46    5.
  3  PER GRASS
       AGSM      .93   20.   18.42    .92     .99   68.44    99.14
       ORHY      .40    3.    8.69    .43    1.09   41.72    46.77
       SIHY      .23    4.    4.07    .20     .90   19.54    21.90
       STCO      .04    1.     .31    .02     .39    1.48     1.66
              TOTAL PERENNIAL GRASS PRODUCTION = 151.18   169.47
  2  PER FORBS
       PECL      .05    1.
          PERENNIAL FORBS =    .70    .04     .70    3.36     3.77

         ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 154.54  173.24


    PRECIPITATION DATA              PRODUCTION ESTIMATES OF SHRUBS
    RAIN GAUGE                      AND WOODY MAT FORM PLANTS
  **********************            *********************************
   OCT 15 TP APR 15 = 2.43            ATCO              .46      .54
   APR 15 TO JULY 1 = 2.50            ARTR           255.81   286.76
   JULY 1 TO SEPT 1 =  .79            CELA              .57      .64
   SEPT 1 TO OCT 15 = 1.29            CHVI            16.09    18.03
   SEASON LONG TOTAL= 7.01            PHHO             4.51     5.05
   LONG TERM AVERAGE= 6.62

                        TOTAL SHRUB PRODUCTION =  277.46   311.03



                               TOTAL PRODUCTION =  432.00   484.27
                               ***********************************
```

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1007.    GRANIT MT     12 AUGUST    1981     IN NATIVE

                  NUMBER OF PLOTS = 20
                          PLOT SIZE 1X1
PLANT   PLANT   AVE.   1X1    TOTAL   AVE.    WGT./   LBS    KGS
CODE    NAME    PER-   ABS.   WGT.    WGT.    UNIT    PER    PER
                CENT   PLOT   GMS/20  /PLOT   COVER   ACRE   HA.
                COVER  FREQ.  SQ.FT.  OCCUR-  AREA
                AREA   BASE           RENCES
                       20
*****************************************************************************
  6   SHRUBS
        ARTR      9.95     12.
        CHVI       .30      1.
        PHHO      1.01      9.
  3   PER GRASS
        AGSM       .44     19.   13.37     .67    1.54   64.19   71.96
        POFE      5.67     19.   42.57    2.13     .38  204.40  229.13
        POSE       .13      7.    1.48     .07     .57    7.10    7.96
                TOTAL PERENNIAL GRASS PRODUCTION =    275.69  309.05
  2   PER FORBS
        AGGL       .03      4.
        ASMI       .09      7.
        CRAC       .02      2.
        ERPU       .01      1.
        LELU       .01      1.
        TRGY       .03      5.
            PERENNIAL FORBS =     2.15     .11     .65   10.32   11.57

         ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION =   286.01  320.62


   PRECIPITATION DATA                PRODUCTION ESTIMATES OF SHRUBS
   RAIN GAUGE                        AND WOODY MAT FORM PLANTS
***********************              ******************************
 OCT 15 TP APR 15 =  2.46            ARTR             407.49  456.80
 APR 15 TO JULY 1 =  4.82            CHVI               2.46    2.76
 JULY 1 TO SEPT 1 =  1.61
 SEPT 1 TO OCT 15 =  1.44
 SEASON LONG TOTAL= 10.33
 LONG TERM AVERAGE=  8.75

                       TOTAL SHRUB PRODUCTION =   409.95  459.56


                             TOTAL PRODUCTION =   695.96  780.17
                             ******************************
```

```
1007.    GRANIT MT    12 AUGUST    1981    OUT NATIVE

                   NUMBER OF PLOTS = 20
                      PLOT SIZE 1X1
PLANT   PLANT    AVE.   1X1    TOTAL    AVE.   WGT./   LBS    KGS
CODE    NAME     PER-   ABS.   WGT.     WGT.   UNIT    PER    PER
                 CENT   PLOT   GMS/20   /PLOT  COVER   ACRE   HA.
                 COVER  FREQ.  SQ.FT.   OCCUR- AREA
                 AREA   BASE            RENCES
                        20
*****************************************************************************
  6  SHRUBS
        ANDI      .14     5.
        ARTR    13.55    10.
        CHVI      .35     2.
        PHHO     1.52    10.
  3  PER GRASS
        AGSM      .60    17.    8.99     .45     .75   43.16    48.38
        PUFE     3.05    17.   22.63    1.13     .37  108.66   121.81
        PUSE      .96    15.    7.50     .38     .39   36.01    40.37
              TOTAL PERENNIAL GRASS PRODUCTION =      187.83   210.56
  2  PER FORBS
        ASMI      .51     9.
        ERPU      .01     1.
        LELU      .04     2.
        TRGY      .03     6.
           PERENNIAL FORBS =    2.99     .15     .26   14.35    16.09
  4  ANN FORBS
        COPA      .01     1.
              ANNUAL FORBS =     .72     .04    7.20    3.45     3.87

        ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION =      205.63   230.51



     PRECIPITATION DATA                PRODUCTION ESTIMATES OF SHRUBS
     RAIN GAUGE                        AND WOODY MAT FORM PLANTS
     ***********************           ********************************
     OCT 15 TO APR 15 =  2.46             ARTR           340.25  381.42
     APR 15 TO JULY 1 =  4.82             CHVI            26.25   29.43
     JULY 1 TO SEPT 1 =  1.61
     SEPT 1 TO OCT 15 =  1.44
     SEASON LONG TOTAL= 10.33
     LONG TERM AVERAGE=  8.75

                     TOTAL SHRUB PRODUCTION =  366.50  410.84


                         TOTAL PRODUCTION =  572.13  641.36
                         ***********************************
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1007.    GRANIT MT    12 AUGUST     1981     IN SPRAY

                      NUMBER OF PLOTS = 20
                         PLOT SIZE 1X1
PLANT    PLANT    AVE.    1X1     TOTAL    AVE.    WGT./    LBS    KGS
CODE     NAME     PER-    ABS.    WGT.     WGT.    UNIT     PER    PER
                  CENT    PLOT    GMS/20   /PLOT   COVER    ACRE   HA.
                  COVER   FREQ.   SQ.FT.   OCCUR-  AREA
                  AREA    BASE             RENCES
                          20
*************************************************************************
  6   SHRUBS
        ARTR      14.35      8.
        CHVI        .05      1.
  3   PER GRASS
        AGSM        .84     18.   26.75    1.34     1.58 128.44   143.98
        POFE       7.55     19.   81.94    4.10      .54 393.45   441.06
        POSE        .15      4.    1.55     .08      .53   7.44     8.34
                  TOTAL PERENNIAL GRASS PRODUCTION = 529.33   593.38
  2   PER FORBS
        AGGL        .03      4.
        ANRO        .15      1.
        LELU        .02      2.
        TRGY        .01      1.
             PERENNIAL FORBS =      .38      .02      .09   1.82     2.04

           ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 531.15   595.42


   PRECIPITATION DATA                  PRODUCTION ESTIMATES OF SHRUBS
   RAIN GAUGE                          AND WOODY MAT FORM PLANTS
   ***********************             *******************************
  OCT 15 TP APR 15 =   2.46              ARTR             167.99   188.31
  APR 15 TO JULY 1 =   3.82              CHVI              31.17    34.94
  JULY 1 TO SEPT 1 =   1.61
  SEPT 1 TO OCT 15 =   1.44
  SEASON LONG TOTAL=  10.33
  LONG TERM AVERAGE=   8.75

                         TOTAL SHRUB PRODUCTION =  199.16   223.25


                              TOTAL PRODUCTION =  730.31   818.67
                              ***********************************
```

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 1007.    GRANIT MT    12 AUGUST      1981      OUT SPRAY

                     NUMBER OF PLOTS = 20
                        PLOT SIZE 1X1
PLANT    PLANT    AVE.    1X1     TOTAL    AVE.    WGT./    LBS    KGS
CODE     NAME     PER-    ABS.    WGT.     WGT.    UNIT     PER    PER
                  CENT    PLOT    GMS/20   /PLOT   COVER    ACRE   HA.
                  COVER   FREQ.   SQ.FT.   OCCUR-  AREA
                  AREA    BASE             RENCES
                           20
*********************************************************************
   6  SHRUBS
        ARTR      21.14     13.
        CHVI       1.00      2.
        PHHO        .35      4.
   3  PER GRASS
        AGSM        .76     20.   11.61      .58      .76   55.74   62.48
        POFE       1.72     15.   13.30      .67      .39   63.86   71.59
        POSE        .63     13.    4.47      .22      .35   21.46   24.06
                 TOTAL PERENNIAL GRASS PRODUCTION = 141.06  158.13
   2  PER FORBS
        AGGL        .03      3.
        ASMI        .05      2.
        ERPU        .01      1.
              PERENNIAL FORBS =     .54      .03      .36    2.59    2.90

             ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 143.65  161.03


     PRECIPITATION DATA                PRODUCTION ESTIMATES OF SHRUBS
     RAIN GAUGE                        AND WOODY MAT FORM PLANTS
    ************************           **********************************
     OCT 15 TP APR 15 =  2.46           ARTR               239.17  268.11
     APR 15 TO JULY 1 =  4.82           CHVI                20.51   22.99
     JULY 1 TO SEPT 1 =  1.61
     SEPT 1 TO OCT 15 =  1.44
     SEASON LONG TOTAL= 10.33
     LONG TERM AVERAGE=  8.75

                             TOTAL SHRUB PRODUCTION =  259.68  291.10


                                  TOTAL PRODUCTION =  403.33  452.13
                                  ***********************************
```

```
901.   HAL EXC 1      7 JULY        1981      IN NATIVE

                    NUMBER OF PLOTS = 20
                       PLOT SIZE 1X10
PLANT   PLANT    AVE.   1X1     TOTAL   AVE.    WGT./    LBS    KGS
CODE    NAME     PER-   ABS.    WGT.    WGT.    UNIT     PER    PER
                 CENT   PLOT    GMS/20  /PLOT   COVER    ACRE   HA.
                 COVER  FREQ.   SQ.FT.  OCCUR-  AREA
                 AREA   BASE            RENCES
                        20
*******************************************************************************
 6   SHRUBS
       OPPO        .03     2.
       ARSP        .44    10.
       ATGA       7.94    20.   41.74    2.09     .26 200.42   224.67
 3   PER GRASS
       SIHY       1.32    20.   29.77    1.49    1.13 142.94   160.24
                 TOTAL PERENNIAL GRASS PRODUCTION = 142.94     160.24
 2   PER FORBS
       MACA        .01     5.
       SILI        .00     1.
           PERENNIAL FORBS =      .91     .05    5.69   4.36     4.89
 4   ANN FORBS
       DEPI        .00     2.
       EUSE        .00     1.
       GIPU        .00     1.
       LARE        .01     2.
       LEDE        .02    13.
              ANNUAL FORBS =      .14     .01     .19    .67      .75

          ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 348.39     390.55


    PRECIPITATION DATA              PRODUCTION ESTIMATES OF SHRUBS
    RAIN GAUGE                      AND WOODY MAT FORM PLANTS
   ************************          *******************************
   OCT 15 TP APR 15 = 1.04           ARTR              1.74     1.95
   APR 15 TO JULY 1 = 3.24           OPPO              5.14     5.76
   JULY 1 TO SEPT 1 =  .41
   SEPT 1 TO OCT 15 = 1.48
   SEASON LONG TOTAL= 6.17
   LONG TERM AVERAGE= 5.47

                     TOTAL SHRUB PRODUCTION =     6.87     7.71


                         TOTAL PRODUCTION =  355.26   398.25
                         ************************************
```

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902.   HAL EXC 2       6 JULY        1981      IN NATIVE

                         NUMBER OF PLOTS = 20
                         PLOT SIZE 1X1
PLANT    PLANT    AVE.    1X1     TOTAL    AVE.    WGT./    LBS     KGS
CODE     NAME     PER-    ABS.    WGT.     WGT.    UNIT     PER     PER
                  CENT    PLOT    GMS/20   /PLOT   COVER    ACRE    HA.
                  COVER   FREQ.   SQ.FT.   OCCUR-  AREA
                  AREA    BASE             RENCES
                          20
******************************************************************************
  5   SHRUBS
         ATGA       6.52     20.   43.20    2.16     .33  207.43   232.53
         ARSP        .10      2.
  3   PER GRASS
         PUSE       1.23     10.    8.11     .41     .33   38.94    43.65
         SIHY       1.94     19.   42.92    2.15    1.11  206.08   231.02
                  TOTAL PERENNIAL GRASS PRODUCTION =      245.02   274.67
  4   ANN FORBS
         LEDE        .04      7.
         MATA        .02      2.
                 ANNUAL FORBS =      .53     .03     .48    2.54     2.85

            ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION =      454.99   510.04


   PRECIPITATION DATA                    PRODUCTION ESTIMATES OF SHRUBS
   RAIN GAUGE                            AND WOODY MAT FORM PLANTS
  ************************               ********************************
   OCT 15 TP APR 15 = 1.26                OPPO             4.28     4.80
   APR 15 TO JULY 1 = 3.48
   JULY 1 TO SEPT 1 =  .38
   SEPT 1 TO OCT 15 = 1.57
   SEASON LONG TOTAL= 6.69
   LONG TERM AVERAGE= 6.04

                              TOTAL SHRUB PRODUCTION =     4.28     4.80


                                   TOTAL PRODUCTION =  459.27   514.84
                                   ************************************
```

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903.   HAL EXC 3       8 JULY        1981         IN NATIVE

                        NUMBER OF PLOTS = 20
                          PLOT SIZE 1X10
LANT     PLANT     AVE.   1X1     TOTAL     AVE.     WGT./    LBS     KGS
ODE      NAME      PER-   ABS.    WGT.      WGT.     UNIT     PER     PER
                   CENT   PLOT    GMS/20    /PLOT    COVER    ACRE    HA.
                   COVER  FREQ.   SQ.FT.    OCCUR-   AREA
                   AREA   BASE              RENCES
                          20
**************************************************************************
  6   SHRUBS
        ARSP        .18      1.
        ATGA       7.28     20.   37.59     1.88      .26 180.49   202.33
        OPPO        .10      2.
  3   PER GRASS
        SIHY       1.73     19.   36.26     1.81     1.05 174.20   195.28
               TOTAL PERENNIAL GRASS PRODUCTION = 174.20   195.28
  2   PER FORBS
        ALTE        .01      1.
            PERENNIAL FORBS =      .10      .01     1.00      .48      .54
  4   ANN FORBS
        LARE        .04      6.
        LEDE        .02      4.
        MATA        .02      2.
                  ANNUAL FORBS =  2.96      .15     2.11    14.21    15.93

           ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 369.38   414.07


    PRECIPITATION DATA                    PRODUCTION ESTIMATES OF SHRUBS
    RAIN GAUGE                            AND WOODY MAT FORM PLANTS
    ***********************               *******************************
    OCT 15 TP APR 15 =  .96                OPPO               8.27    9.27
    APR 15 TO JULY 1 = 3.28
    JULY 1 TO SEPT 1 =  .32
    SEPT 1 TO OCT 15 = 1.52
    SEASON LONG TOTAL= 6.08
    LONG TERM AVERAGE= 5.61

                           TOTAL SHRUB PRODUCTION =       8.27    9.27


                                 TOTAL PRODUCTION =  377.65   423.35
                                 ************************************
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910.   HAL PAST 6     06 JULY      1981

                       NUMBER OF PLOTS = 20
                         PLOT SIZE 1X1
PLANT    PLANT    AVE.    1X1     TOTAL    AVE.     WGT./    LBS     KGS
CODE     NAME     PER-    ABS.    WGT.     WGT.     UNIT     PER     PER
                  CENT    PLOT    GMS/20   /PLOT    COVER    ACRE    HA.
                  COVER   FREQ.   SQ.FT.   OCCUR-   AREA
                  AREA    BASE             RENCES
                          20
*****************************************************************************
   6  SHRUBS
        ATGA        7.07     20.   33.89    1.69      .24 162.72  182.41
        ARSP         .05      1.
   3  PER GRASS
        POSE         .01      1.    1.00     .05     7.14   4.80     5.38
        SIHY        1.81     20.   39.96    2.00     1.10 191.87  215.09
                  TOTAL PERENNIAL GRASS PRODUCTION = 196.67  220.47
   2  PER FORBS
        ALTE         .01      1.
        MACA         .02      2.
        SILI         .01      1.
                PERENNIAL FORBS =    .56     .03     1.12   2.68     3.00
   4  ANN FORBS
        LARE         .03      4.
        LEDE         .02      2.
        MATA         .03      4.
        PLPA         .01      1.
                   ANNUAL FORBS =   1.73     .09     1.24   8.30     9.30

              ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 370.37  415.18


   PRECIPITATION DATA                      PRODUCTION ESTIMATES OF SHRUBS
   RAIN GAUGE                              AND WOODY MAT FORM PLANTS
   ***********************                 *********************************
   OCT 15 TP APR 15 =   .96                  OPPO                1.65     1.85
   APR 15 TO JULY 1 =  3.28
   JULY 1 TO SEPT 1 =   .32
   SEPT 1 TO OCT 15 =  1.52
   SEASON LONG TOTAL=  6.08
   LONG TERM AVERAGE=  5.61

                               TOTAL SHRUB PRODUCTION =      1.65     1.85


                                     TOTAL PRODUCTION =  372.02  417.04
                                     *********************************
```

```
911.   HAL PAST7A     8 JULY        1981

                      NUMBER OF PLOTS = 20
                         PLOT SIZE 1X1
PLANT    PLANT    AVE.    1X1     TOTAL   AVE.    WGT./    LBS     KGS
CODE     NAME     PER-    ABS.    WGT.    WGT.    UNIT     PER     PER
                  CENT    PLOT    GMS/20  /PLOT   COVER    ACRE    HA.
                  COVER   FREQ.   SQ.FT.  OCCUR-  AREA
                  AREA    BASE            RENCES
                          20
***************************************************************************
  6   SHRUBS
       ATGA       6.91     20.   43.49    2.17     .31 208.82   234.09
  3   PER GRASS
       SIHY       2.23     18.   46.36    2.42    1.09 232.20   260.30
                  TOTAL PERENNIAL GRASS PRODUCTION = 232.20   260.30
  4   ANN FORBS
       LARE        .01      1.
       LEDE        .03      6.
       MATA        .04      5.
                ANNUAL FORBS =     .87     .04     .62   4.17     4.67

          ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 445.19   499.06


  PRECIPITATION DATA                    PRODUCTION ESTIMATES OF SHRUBS
  RAIN GAUGE                            AND WOODY MAT FORM PLANTS
 **********************                *******************************
  OCT 15 TP APR 15 =  .96                OPPU            12.42   13.93
  APR 15 TO JULY 1 = 3.28
  JULY 1 TO SEPT 1 =  .32
  SEPT 1 TO OCT 15 = 1.52
  SEASON LONG TOTAL= 6.08
  LONG TERM AVERAGE= 5.61

                            TOTAL SHRUB PRODUCTION =    12.42   13.93


                                  TOTAL PRODUCTION =  457.61   512.98
                                  ************************************
 913.    HORSE CRK    22 JULY        1981       IN AGSM

                        NUMBER OF PLOTS = 20
                          PLOT SIZE 1X1
PLANT    PLANT    AVE.    1X1      TOTAL    AVE.     WGT./    LBS    KGS
CODE     NAME     PER-    ABS.     WGT.     WGT.     UNIT     PER    PER
                  CENT    PLOT     GMS/20   /PLOT    COVER    ACRE   HA.
                  COVER   FREQ.    SQ.FT.   OCCUR-   AREA
                  AREA    BASE              RENCES
                          20
*************************************************************************
   6   SHRUBS
         ARTR      12.05      7.
         OPPO        .01      1.
         XASA        .25      1.
   3   PER GRASS
         AGSM       1.25     20.   73.36    3.67    2.93 352.25   394.87
         POSE        .31      8.    1.38     .07     .22   6.62     7.42
                  TOTAL PERENNIAL GRASS PRODUCTION = 358.87   402.29
   5   ANN GRASS
         BRJA        .01      2.
              ANNUAL GRASSES =       .42     .02    2.10   2.01     2.25

            ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 360.88   404.55


     PRECIPITATION DATA                   PRODUCTION ESTIMATES OF SHRUBS
     RAIN GAUGE                           AND WOODY MAT FORM PLANTS
    **********************                *******************************
     OCT 15 TP APR 15 =  3.08              ARTR          169.03   189.49
     APR 15 TO JULY 1 =  5.65              OPPO            4.83     5.41
     JULY 1 TO SEPT 1 =  1.84              PHHO            2.82     3.17
     SEPT 1 TO OCT 15 =  1.75
     SEASON LONG TOTAL= 12.32
     LONG TERM AVERAGE= 11.11

                               TOTAL SHRUB PRODUCTION =  176.69   198.06



                                    TOTAL PRODUCTION =  537.57   602.61
                                    **********************************
```

```
913.    HORSE CRK    22 JULY        1981       OUT AGSM

                      NUMBER OF PLOTS = 20
                         PLOT SIZE 1X1
PLANT    PLANT    AVE.    1X1     TOTAL    AVE.    WGT./    LBS    KGS
CODE     NAME     PER-    ABS.    WGT.     WGT.    UNIT     PER    PER
                  CENT    PLOT    GMS/20   /PLOT   COVER    ACRE   HA.
                  COVER   FREQ.   SQ.FT.   OCCUR-  AREA
                  AREA    BASE             RENCES
                          20
*****************************************************************************
   6  SHRUBS
        ARTR       9.04      9.
        OPPO        .19      2.
        PHHO        .23      3.
        XASA       2.50      2.
   3  PER GRASS
        AGSM        .92     20.   24.39    1.22     1.33 117.11   131.28
        POSE        .06      6.    1.44     .07     1.31   6.91     7.75
                  TOTAL PERENNIAL GRASS PRODUCTION = 124.02   139.03
   2  PER FORBS
        SPCO        .28      2.
             PERENNIAL FORBS =    1.13     .06      .21    5.42     6.08
   4  ANN FORBS
        CHDE        .01      2.
                 ANNUAL FORBS =    .07     .00      .35     .33      .37

          ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 129.77  145.47



   PRECIPITATION DATA                  PRODUCTION ESTIMATES OF SHRUBS
   RAIN GAUGE                          AND WOODY MAT FORM PLANTS
  ***********************              ******************************
   OCT 15 TP APR 15 =  3.08             ARTR              321.14  359.99
   APR 15 TO JULY 1 =  5.65             OPPO               10.20   11.44
   JULY 1 TO SEPT 1 =  1.84             PHHO               15.55   17.43
   SEPT 1 TO OCT 15 =  1.75             XASA               88.83   99.58
   SEASON LONG TOTAL= 12.32
   LONG TERM AVERAGE= 11.11

                         TOTAL SHRUB PRODUCTION =  435.72  488.44



                              TOTAL PRODUCTION =  565.49  633.91
                              ***********************************
```

```
    913.    HORSE CRK    22 JULY       1981       IN AGSP

                      NUMBER OF PLOTS = 20
                        PLOT SIZE 1X1
 PLANT   PLANT   AVE.   1X1    TOTAL   AVE.   WGT./  LBS    KGS
 CODE    NAME    PER-   ABS.   WGT.    WGT.   UNIT   PER    PER
                 CENT   PLOT   GMS/20  /PLOT  COVER  ACRE   HA.
                 COVER  FREQ.  SQ.FT.  OCCUR- AREA
                 AREA   BASE           RENCES
                        20
**********************************************************************
    6  SHRUBS
         ARTR      4.70     4.
         CPPO       .20     2.
         PHHO       .12     2.
    3  PER GRASS
         AGSP      1.20    19.  67.94   3.40   2.83 326.22  365.69
         POSE       .19     7.   2.20    .11    .56  10.56   11.84
                 TOTAL PERENNIAL GRASS PRODUCTION = 336.78  377.53
    2  PER FORBS
         SPCO       .02     1.
         UNKN       .01     1.
               PERENNIAL FORBS =  .19    .01    .48    .91    1.02

            ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 337.69  378.55


     PRECIPITATION DATA                PRODUCTION ESTIMATES OF SHRUBS
     RAIN GAUGE                        AND WOODY MAT FORM PLANTS
    ***********************            *******************************
     OCT 15 TP APR 15 = 3.08             ARNO             66.20   74.21
     APR 15 TO JULY 1 = 5.65             ARTR            313.10  350.98
     JULY 1 TO SEPT 1 = 1.84             CPPC             16.25   18.22
     SEPT 1 TO OCT 15 = 1.75             PHHO              4.79    5.37
     SEASON LONG TOTAL=12.32             XASA             31.16   34.93
     LONG TERM AVERAGE=11.11

                              TOTAL SHRUB PRODUCTION =  431.50  483.71


                                    TOTAL PRODUCTION =  769.19  862.26
                                    *****************************
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```
913.    HORSE CRK     22 JULY        1981        OUT AGSP

                         NUMBER OF PLOTS = 20
                         PLOT SIZE 1X1
PLANT    PLANT    AVE.    1X1     TOTAL    AVE.    WGT./    LBS     KGS
CODE     NAME     PER-    ABS.    WGT.     WGT.    UNIT     PER     PER
                  CENT    PLOT    GMS/20   /PLOT   COVER    ACRE    HA.
                  COVER   FREQ.   SQ.FT.   OCCUR-  AREA
                  AREA    BASE             RENCES
                          20
*******************************************************************************
   6  SHRUBS
        ARTR      11.18     12.
        OPPO        .30      1.
        PHHO        .10      1.
        XASA       5.03     11.
   3  PER GRASS
        AGSP        .36     14.     6.97     .35      .98    33.46    37.51
        POSE        .10      6.     2.25     .11     1.13    10.80    12.11
                  TOTAL PERENNIAL GRASS PRODUCTION =         44.26    49.62
   2  PER FORBS
        SPCO        .02      2.
              PERENNIAL FORBS =      .37      .02     1.23     1.77     1.98
   5  ANN GRASS
        BRJA        .01      1.
               ANNUAL GRASSES =      .05      .00      .50      .24      .27
   4  ANN FORBS
        CHDE        .02      2.
                 ANNUAL FORBS =      .21      .01      .70     1.00     1.12

      ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION =      47.27    52.99


  PRECIPITATION DATA                PRODUCTION ESTIMATES OF SHRUBS
  RAIN GAUGE                        AND WOODY MAT FORM PLANTS
***********************             ********************************
  OCT 15 TP APR 15 =  3.08            ARNO             37.49    42.03
  APR 15 TO JULY 1 =  5.65            ARTR            448.51   502.79
  JULY 1 TO SEPT 1 =  1.84            OPPO             24.07    26.98
  SEPT 1 TO OCT 15 =  1.75            PHHO             25.13    28.17
  SEASON LONG TOTAL= 12.32            XASA            217.69   244.02
  LONG TERM AVERAGE= 11.11

                         TOTAL SHRUB PRODUCTION =   752.89   843.99


                              TOTAL PRODUCTION =   800.16   896.98
                              *************************************
```

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914.    KANE DEER      22 JULY        1981      IN NATIVE

                            NUMBER OF PLOTS = 20
                              PLOT SIZE 1X1
PLANT    PLANT     AVE.     1X1      TOTAL     AVE.     WGT./    LBS     KGS
CODE     NAME      PER-     ABS.     WGT.      WGT.     UNIT     PER     PER
                   CENT     PLOT     GMS/20    /PLOT    COVER    ACRE    HA.
                   COVER    FREQ.    SQ.FT.    OCCUR-   AREA
                   AREA     BASE               RENCES
                            20
****************************************************************************
   6   SHRUBS
         EROV         .23        3.
         JUOS        9.50        5.
         PHHO         .40        2.
   3   PER GRASS
         AGSP         .24        5.     5.80      .29     1.23    27.84    31.21
         POSE         .04        1.      .13      .01      .16      .62      .70
                   TOTAL PERENNIAL GRASS PRODUCTION =             28.46    31.90
   2   PER FORBS
         ANRO         .02        2.
         SECA         .02        2.
               PERENNIAL FORBS =       2.33      .12     3.88    11.18    12.53

            ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION =              39.64    44.44


    PRECIPITATION DATA
    RAIN GAUGE
 ***********************
    OCT 15 TP APR 15 =  2.84
    APR 15 TO JULY 1 =  8.50
    JULY 1 TO SEPT 1 =  1.58
    SEPT 1 TO OCT 15 =  2.33
    SEASON LONG TOTAL= 15.25
    LONG TERM AVERAGE= 11.99
   914.    KANE DEER     23 JULY      1981       OUT NATIVE

                  NUMBER OF PLOTS = 20
                    PLOT SIZE 1X1 .
PLANT   PLANT    AVE.   1X1     TOTAL    AVE.     WGT./    LBS     KGS
CODE    NAME'    PER-   ABS.    WGT.     WGT.     UNIT     PER     PER
                 CENT   PLOT    GMS/20   /PLOT    COVER    ACRE    HA.
                 COVER  FREQ.   SQ.FT.   OCCUR-   AREA
                 AREA   BASE             RENCES
                        20
*************************************************************
   6  SHRUBS
        ARTR      4.25     1.
        EROV       .03     4.
        JUOS     18.00     9.
        XASA       .08     3.
   3  PER GRASS
        AGSP       .25     6.   2.43     .12      .62   11.66   13.07
        POSE       .04     1.    .01     .00      .01     .04     .04
              TOTAL PERENNIAL GRASS PRODUCTION =        11.70   13.12
   2  PER FORBS
        ANRO       .05     2.
        SECA       .01     1.
        PF         .01     2.
           PERENNIAL FORBS =     .35     .02      .25    1.66    1.88

         ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION =       13.38   15.00


    PRECIPITATION DATA
    RAIN GAUGE
  ***********************
    OCT 15 TP APR 15 =  2.84
    APR 15 TO JULY 1 =  8.50
    JULY 1 TO SEPT 1 =  1.58
    SEPT 1 TO OCT 15 =  2.33
    SEASON LONG TOTAL= 15.25
    LONG TERM AVERAGE= 11.99
```

```
914.   KANE DEER      23 JULY      1981        IN SPRAY

                       NUMBER OF PLOTS = 20
                         PLOT SIZE 1X1
PLANT    PLANT    AVE.    1X1      TOTAL     AVE.     WGT./     LBS    KGS
CODE     NAME     PER-    ABS.     WGT.      WGT.     UNIT      PER    PER
                  CENT    PLOT     GMS/20    /PLOT    COVER     ACRE   HA.
                  COVER   FREQ.    SQ.FT.    OCCUR-   AREA
                  AREA    BASE               RENCES
                          20
*******************************************************************************
  6   SHRUBS
         ARFR         .51       5.
         ARNO         .31       4.
         EROV         .58       6.
         JUOS         .50       1.
         XASA         .95       5.
  3   PER GRASS
         AGSP         .77       9.     52.21     2.61     3.39 250.69   281.02
         POSE         .05       1.      1.24      .06     1.24   5.95     6.67
         SIHY         .15       4.      3.42      .17     1.14  16.42    18.41
                  TOTAL PERENNIAL GRASS PRODUCTION = 273.06   306.10
  2   PER FORBS
         ANRO         .01       1.
         CHTE         .01       1.
         MACA         .02       2.
         SECA         .03       3.
         TRDU         .02       1.
         UNKN         .05       1.
         UNKN         .11       5.
              PERENNIAL FORBS =  11.52      .58     2.50  55.31    62.00
  5   ANN GRASS
         BRTE         .06       3.
               ANNUAL GRASSES =   3.89      .19     3.24  18.67    20.93

              ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 347.04   389.03


     PRECIPITATION DATA
     RAIN GAUGE
   ***********************
     OCT 15 TP APR 15 = 2.84
     APR 15 TO JULY 1 = 8.50
     JULY 1 TO SEPT 1 = 1.58
     SEPT 1 TO OCT 15 = 2.33
     SEASON LONG TOTAL= 15.25
     LONG TERM AVERAGE= 11.99
```

```
914.    KANE DEER        23 JULY        1981        OUT SPRAY

                              NUMBER OF PLOTS = 20
                                PLOT SIZE 1X1
PLANT     PLANT     AVE.     1X1      TOTAL     AVE.     WGT./     LBS      KGS
CODE      NAME      PER-     ABS.     WGT.      WGT.     UNIT      PER      PER
                    CENT     PLOT     GMS/20    /PLOT    COVER     ACRE     HA.
                    COVER    FREQ.    SQ.FT.    OCCUR-   AREA
                    AREA     BASE               RENCES
                             20
*****************************************************************************
  6   SHRUBS
         ARFR          .07      3.
         ARTR         2.31      9.
         XASA          .41      4.
  3   PER GRASS
         AGSP         1.95     17.    55.98     2.60     1.44   268.79   301.31
         ARFE          .39      3.     6.75      .34      .87    32.41    36.33
         POSE          .13      3.      .33      .02      .13     1.58     1.77
         STCO          .05      1.      .36      .02      .36     1.72     1.93
                TOTAL PERENNIAL GRASS PRODUCTION =   304.50   341.34
  2   PER FORBS
         PECL          .10      2.
              PERENNIAL FORBS =        1.78      .09      .89     8.54     9.57
  4   ANN FORBS
         LARE          .01      2.
                ANNUAL FORBS =          .20      .01     1.00      .96     1.08

           ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION =   314.00   351.99


    PRECIPITATION DATA
    RAIN GAUGE
  ***********************
    OCT 15 TP APR 15 =   2.84
    APR 15 TO JULY 1 =   8.50
    JULY 1 TO SEPT 1 =   1.58
    SEPT 1 TO OCT 15 =   2.33
    SEASON LONG TOTAL=  15.25
    LONG TERM AVERAGE=  11.99
```

```
921.     KANE GRI      23 JULY        1981        CUT NATIVE

                     NUMBER OF PLOTS = 20
                       PLOT SIZE 1X1
PLANT    PLANT    AVE.    1X1     TOTAL    AVE.    WGT./    LBS    KGS
CODE     NAME     PER-    ABS.    WGT.     WGT.    UNIT     PER    PER
                  CENT    PLOT    GMS/20   /PLOT   COVER    ACRE   HA.
                  COVER   FREQ.   SQ.FT.   OCCUR-  AREA
                  AREA    BASE             RENCES
                          20
****************************************************************
  6  SHRUBS
       ARHO        .06      2.
       ARNO       4.06      5.
       ARTR        .03      1.
       JUOS      10.25      6.
       PHHO        .02      2.
       XASA        .04      3.
  3  PER GRASS
       CAFI        .02      1.      .01     .00     .03     .04      .04
       AGSP        .37      7.     3.77     .19     .51   18.10    20.29
       POSE        .15      2.      .11     .01     .04     .52      .58
                  TOTAL PERENNIAL GRASS PRODUCTION =       18.66    20.92
  2  PER FORBS
       SECA        .03      2.
              PERENNIAL FORBS =     .39     .02     .78    1.87     2.10

         ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION =          20.53    23.01


  PRECIPITATION DATA
  RAIN GAUGE
************************
  OCT 15 TP APR 15 =  2.65
  APR 15 TO JULY 1 =  8.31
  JULY 1 TO SEPT 1 =  1.42
  SEPT 1 TO OCT 15 =  2.34
  SEASON LONG TOTAL= 14.72
  LONG TERM AVERAGE= 12.46
```

```
921.   KANE GRI      23 JULY      1981        IN SPRAY

                    NUMBER OF PLOTS = 20
                      PLOT SIZE 1X1
PLANT    PLANT    AVE.    1X1     TOTAL    AVE.    WGT./    LBS    KGS
CODE     NAME     PER-    ABS.    WGT.     WGT.    UNIT     PER    PER
                  CENT    PLOT    GMS/20   /PLOT   COVER    ACRE   HA.
                  COVER   FREQ.   SQ.FT.   OCCUR-  AREA
                  AREA    BASE             RENCES
                          20
*****************************************************************************
  6   SHRUBS
        ARHO        .01       1.
        ARNO       4.26       6.
        PHHO        .03       1.
        XASA       1.97       5.
  3   PER GRASS
        AGSP       2.00      16.   69.51     3.48     1.74 333.76   374.14
        CAFI        .25       1.    5.08      .25     1.02  24.39    27.34
        KOCR        .21       1.    2.61      .13      .62  12.53    14.05
        POSE        .13       4.     .38      .02      .15   1.82     2.04
                TOTAL PERENNIAL GRASS PRODUCTION = 372.50   417.57
  2   PER FORBS
        ANRO        .05       3.
        PECL        .04       4.
        SECA        .14       8.
        TRDU        .01       1.
            PERENNIAL FORBS =    7.03      .35     1.50  33.75    37.83
  5   ANN GRASS
        AG         .05        1.
              ANNUAL GRASSES =   4.01      .20     4.01  19.25    21.58
  4   ANN FORBS
        DEPI        .01       1.
                ANNUAL FORBS =    .01      .00      .10    .04      .04

          ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 425.54   477.03


  PRECIPITATION DATA
  RAIN GAUGE
**********************
  OCT 15 TP APR 15 =  2.65
  APR 15 TO JULY 1 =  8.31
  JULY 1 TO SEPT 1 =  1.42
  SEPT 1 TO OCT 15 =  2.34
  SEASON LONG TOTAL= 14.72
  LONG TERM AVERAGE= 12.46
```

```
   1502.    KIRBY CRK     9 JULY      1981      IN NATIVE

                      NUMBER OF PLOTS = 20
                        PLOT SIZE 1X1
 PLANT   PLANT   AVE.   1X1    TOTAL   AVE.   WGT./   LBS   KGS
 CODE    NAME    PER-   ABS.   WGT.    WGT.   UNIT    PER   PER
                 CENT   PLOT   GMS/20  /PLOT  COVER   ACRE  HA.
                 COVER  FREQ.  SQ.FT.  OCCUR- AREA
                 AREA   BASE           RENCES
                        20
*************************************************************************
    6  SHRUBS
         SAVE      6.45      9.
    3  PER GRASS
         AGSM       .08      4.  10.56      .53   7.05  50.80    56.95
         POSE       .01      1.    .01      .00    .10    .04      .04
                 TOTAL PERENNIAL GRASS PRODUCTION =     50.84    56.99
    5  ANN GRASS
         BRTE       .39     15.
               ANNUAL GRASSES =  33.72     1.69   4.38 161.91   181.50
    4  ANN FORBS
         CAMI       .09      7.
         LEPE       .80     19.
                 ANNUAL FORBS =  72.31     3.62   4.09 347.21   389.22

           ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 559.96   627.72


      PRECIPITATION DATA              PRODUCTION ESTIMATES OF SHRUBS
      RAIN GAUGE                      AND WOODY MAT FORM PLANTS
     **********************           ********************************
      OCT 15 TP APR 15 = 4.76           SAVE            164.41   184.30
      APR 15 TO JULY 1 = 5.05
      JULY 1 TO SEPT 1 = 2.30
      SEPT 1 TO OCT 15 = 1.30
      SEASON LONG TOTAL=13.41
      LONG TERM AVERAGE= 9.86

                            TOTAL SHRUB PRODUCTION =  164.41   184.30


                                 TOTAL PRODUCTION =  724.37   812.02
                                 ************************************
```

```
1502.    KIRBY CRK      9 JULY        1981      OUT NATIVE

                     NUMBER OF PLOTS = 20
                         PLOT SIZE 1X1
LANT    PLANT    AVE.    1X1      TOTAL    AVE.     WGT./    LBS    KGS
ODE     NAME     PER-    ABS.     WGT.     WGT.     UNIT     PER    PER
                 CENT    PLOT     GMS/20   /PLOT    COVER    ACRE   HA.
                 COVER   FREQ.    SQ.FT.   OCCUR-   AREA
                 AREA    BASE              RENCES
                         20
*****************************************************************************
  6   SHRUBS
        SAVE       9.50      8.
  3   PER GRASS
        AGSM        .60     13.   39.39    1.97    3.28 189.13   212.01
        POSE        .09      2.     .11     .01     .06    .52      .58
                 TOTAL PERENNIAL GRASS PRODUCTION = 189.65   212.60
  5   ANN GRASS
        BRTE        .29     20.
              ANNUAL GRASSES =    51.14    2.56    8.97 245.55   275.26
  4   ANN FORBS
        CAMI        .04      5.
        LEPE        .23     20.
        PLPA        .02      2.
               ANNUAL FORBS =     54.01    2.70    9.64 259.33   290.71

          ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 694.53   778.57


   PRECIPITATION DATA                     PRODUCTION ESTIMATES OF SHRUBS
   RAIN GAUGE                             AND WOODY MAT FORM PLANTS
 ************************                 *****************************
  OCT 15 TP APR 15 =  4.76                 SAVE              17.92    20.09
  APR 15 TO JULY 1 =  5.05                 OPPO              11.16    12.51
  JULY 1 TO SEPT 1 =  2.30
  SEPT 1 TO OCT 15 =  1.30
  SEASON LONG TOTAL= 13.41
  LONG TERM AVERAGE=  9.86

                           TOTAL SHRUB PRODUCTION =   29.08    32.60


                                   TOTAL PRODUCTION =  723.61   811.17
                                   ********************************
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```
1001.    LANDER ANT     13 AUGUST      1981      IN NATIVE

                         NUMBER OF PLOTS = 20
                            PLOT SIZE 1X1
PLANT     PLANT     AVE.     1X1      TOTAL     AVE.      WGT./     LBS      KGS
CODE      NAME      PER-     ABS.     WGT.      WGT.      UNIT      PER      PER
                    CENT     PLOT     GMS/20    /PLOT     COVER     ACRE     HA.
                    COVER    FREQ.    SQ.FT.    OCCUR-    AREA
                    AREA     BASE               RENCES
                             20
*****************************************************************************************
   6   SHRUBS
         ARTR       14.53      11.
         OPPO         .65       3.
         PHHO         .08       1.
   3   PER GRASS
         AGSM         .22      11.
         BUGR         .77       9.
         CAEL         .05       5.
         POSE         .71      10.
         STCO         .52      10.
                 TOTAL PERENNIAL GRASS PRODUCTION =
   2   PER FORBS
         ALTE         .01       1.
         SPCO         .04       6.
              PERENNIAL FORBS =
   5   ANN GRASS
         VUOC         .01       1.
              ANNUAL GRASSES =

           ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = MISSING


    PRECIPITATION DATA                     PRODUCTION ESTIMATES OF SHRUBS
    RAIN GAUGE                             AND WOODY MAT FORM PLANTS
    ***********************                ******************************
    OCT 15 TP APR 15 = 2.52                  ARTR             168.54  188.93
    APR 15 TO JULY 1 = 4.25                  PHHO               1.77    1.98
    JULY 1 TO SEPT 1 = 1.16                  OPPO             129.69  145.38
    SEPT 1 TO OCT 15 =  .96
    SEASON LONG TOTAL= 8.89
    LONG TERM AVERAGE= 8.52

                                   TOTAL SHRUB PRODUCTION =  299.99  336.29



                                        **********************************
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```
1001.   LANDER ANT    13 AUGUST      1981       OUT NATIVE

                      NUMBER OF PLOTS = 20
                         PLOT SIZE 1X1
PLANT    PLANT     AVE.    1X1     TOTAL    AVE.    WGT./    LBS    KGS
CODE     NAME      PER-    ABS.    WGT.     WGT.    UNIT     PER    PER
                   CENT    PLOT    GMS/20   /PLOT   COVER    ACRE   HA.
                   COVER   FREQ.   SQ.FT.   OCCUR-  AREA
                   AREA    BASE             RENCES
                           20
*************************************************************************
  6   SHRUBS
        ARTR      16.43    16.
        OPPO        .03     1.
        PHHO        .77     3.
  3   PER GRASS
        AGSM        .27    15.    5.61     .28    1.06   26.93    30.19
        POSE       1.15    16.    4.96     .25     .21   23.81    26.69
        STCO       1.11    14.   13.26     .66     .60   63.67    71.37
                   TOTAL PERENNIAL GRASS PRODUCTION =   114.41   128.25
  2   PER FORBS
        SPCO        .04     5.
             PERENNIAL FORBS =     .57     .03     .71    2.73     3.06

           ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION =   117.14   131.31


     PRECIPITATION DATA              PRODUCTION ESTIMATES OF SHRUBS
     RAIN GAUGE                      AND WOODY MAT FORM PLANTS
   ************************          **********************************
    OCT 15 TP APR 15 =  2.52           ARTR              136.17  152.65
    APR 15 TO JULY 1 =  4.25           OPPO               47.97   53.77
    JULY 1 TO SEPT 1 =  1.16           PHHO                3.56    4.00
    SEPT 1 TO OCT 15 =   .96           CHVI                 .20     .23
    SEASON LONG TOTAL=  8.89
    LONG TERM AVERAGE=  8.52

                           TOTAL SHRUB PRODUCTION =  187.91  210.65


                                 TOTAL PRODUCTION =  305.05  341.96
                                 *************************************
```

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 1003.    LOWER GOV    12 AUGUST     1981       IN NATIVE

                          NUMBER OF PLOTS = 20
                           PLOT SIZE 1X1
PLANT    PLANT    AVE.    1X1     TOTAL     AVE.     WGT./    LBS     KGS
CODE     NAME     PER-    ABS.    WGT.      WGT.     UNIT     PER     PER
                  CENT    PLOT    GMS/20    /PLOT    COVER    ACRE    HA.
                  COVER   FREQ.   SQ.FT.    OCCUR-   AREA
                  AREA    BASE              RENCES
                          20
*****************************************************************************
   6   SHRUBS
         ARTR      25.80     16.
   3   PER GRASS
         AGSM        .48      18.    9.49      .47     1.00   45.56    51.07
         POSE        .57       9.    3.57      .18      .32   17.14    19.21
         STCO        .58       5.   14.08      .70     1.21   67.60    75.78
                  TOTAL PERENNIAL GRASS PRODUCTION = 130.30   146.07
   2   PER FORBS
         COPA        .03       1.
         SPCO        .01       1.
         VIAM        .04       1.
               PERENNIAL FORBS =    2.00       .10     1.43    9.60    10.76
   5   ANN GRASS
         BRTE        .04       3.
                 ANNUAL GRASSES =    .35       .02      .50    1.68     1.88
   4   ANN FORBS
         MEAL        .01       1.
         CORA        .03       1.
         DEPI        .01       1.
         MIGR        .04       5.
                   ANNUAL FORBS =    .27       .01      .18    1.29     1.45

            ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 142.87  160.16


     PRECIPITATION DATA                   PRODUCTION ESTIMATES OF SHRUBS
     RAIN GAUGE                           AND WOODY MAT FORM PLANTS
     **********************               ******************************
     OCT 15 TP APR 15 = 2.52                ARTR            749.98   840.73
     APR 15 TO JULY 1 = 4.20                UPPO              8.71     9.77
     JULY 1 TO SEPT 1 = 1.32
     SEPT 1 TO OCT 15 =  .93
     SEASON LONG TOTAL= 8.97
     LONG TERM AVERAGE=10.22

                            TOTAL SHRUB PRODUCTION =   758.69   850.50


                                    TOTAL PRODUCTION =  901.56 1010.65
                                    *********************************
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1003.     LOWR GOV      12 AUGUST      1981      OUT NATIVE

                          NUMBER OF PLOTS = 20
                             PLOT SIZE 1X1
LANT     PLANT    AVE.    1X1     TOTAL    AVE.     WGT./    LBS    KGS
ODE      NAME     PER-    ABS.    WGT.     WGT.     UNIT     PER    PER
                  CENT    PLOT    GMS/20   /PLOT    COVER    ACRE   HA.
                  COVER   FREQ.   SQ.FT.   OCCUR-   AREA
                  AREA    BASE             RENCES
                          20
*********************************************************************************
  6   SHRUBS
        ARTR      30.50     17.
        OPPO        .05      1.
  3   PER GRASS
        AGSM        .45     19.    7.13     .36      .78   34.23    38.37
        KUCR        .13      2.     .33     .02      .13    1.58     1.77
        POSE        .94     12.    3.62     .18      .19   17.38    19.48
        SIHY        .02      1.     .34     .02      .85    1.63     1.83
        STCO        .67     12.    4.70     .24      .35   22.56    25.29
                TOTAL PERENNIAL GRASS PRODUCTION =         77.38    86.74
  2   PER FORBS
        ASDR        .05      3.
        ERPU        .01      1.
        SPCO        .06      6.
             PERENNIAL FORBS =     2.84     .14     1.29   13.63    15.28
  5   ANN GRASS
        BRTE        .05      6.
        VUOC        .01      2.
              ANNUAL GRASSES =      .68     .03      .57    3.26     3.65
  4   ANN FORBS
        MIGR        .15     14.
        PLPA        .01      1.
        SIAL        .01      1.
                ANNUAL FORBS =     1.74     .09      .56    8.35     9.36

     ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION =  102.62  115.04


 PRECIPITATION DATA                 PRODUCTION ESTIMATES OF SHRUBS
 RAIN GAUGE                         AND WOODY MAT FORM PLANTS
***********************             ******************************
OCT 15 TP APR 15 =  2.52              ARTR          946.58 1063.36
APR 15 TO JULY 1 =  4.20              CHVI           26.67   29.89
JULY 1 TO SEPT 1 =  1.32              OPPO             .85     .95
SEPT 1 TO OCT 15 =   .93
SEASON LONG TOTAL=  8.97
LONG TERM AVERAGE= 10.22

                         TOTAL SHRUB PRODUCTION =  976.10 1094.21


                               TOTAL PRODUCTION = 1078.72 1209.24
                               **********************************
```

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1003.    LOWER GOV    12 AUGUST     1981      IN SPRAY

                        NUMBER OF PLOTS = 20
                          PLOT SIZE 1X1
PLANT    PLANT    AVE.    1X1     TOTAL    AVE.     WGT./    LBS     KGS
CODE     NAME     PER-    ABS.    WGT.     WGT.     UNIT     PER     PER
                  CENT    PLOT    GMS/20   /PLOT    COVER    ACRE    HA.
                  COVER   FREQ.   SQ.FT.   OCCUR-   AREA
                  AREA    BASE             RENCES
                          20
**************************************************************************
   6   SHRUBS
         ARTR        .43      3.
   3   PER GRASS
         AGSM        .73     17.   23.35    1.17    1.59  112.11   125.68
         KOCR        .32      2.    5.04     .25     .80   24.20    27.13
         POSE        .58     11.    5.78     .29     .50   27.75    31.11
         STCO       3.36     17.  109.04    5.45    1.62  523.57   586.92
                  TOTAL PERENNIAL GRASS PRODUCTION = 687.63   770.83
   2   PER FORBS
         SPCO        .01      1.
             PERENNIAL FORBS =       .10     .01    1.00     .48      .54
   5   ANN GRASS
         BRTE        .77     20.
              ANNUAL GRASSES =     27.38    1.37    1.78  131.47   147.38
   4   ANN FORBS
         GIPU        .03      1.
         LARE        .01      1.
         LEDE        .02      2.
         MEAL        .02      3.
         MIGR        .05      4.
         UNKN        .02      3.
                ANNUAL FORBS =      1.41     .07     .56    6.77     7.59

        ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 826.35   926.34


    PRECIPITATION DATA                PRODUCTION ESTIMATES OF SHRUBS
    RAIN GAUGE                        AND WOODY MAT FORM PLANTS
    **********************            *******************************
    OCT 15 TP APR 15 =  2.52            ARTR                11.46   12.85
    APR 15 TO JULY 1 =  4.20            CHVI                 7.36    8.25
    JULY 1 TO SEPT 1 =  1.32            OPPO                 8.29    9.29
    SEPT 1 TO OCT 15 =   .93
    SEASON LONG TOTAL=  8.97
    LONG TERM AVERAGE= 10.22

                           TOTAL SHRUB PRODUCTION =    27.11   30.39


                                TOTAL PRODUCTION =  853.46   956.73
                                ********************************
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1003.    LOWR GOV    12 AUGUST    1981    OUT SPRAY

                        NUMBER OF PLOTS = 20
                           PLOT SIZE 1X1
PLANT    PLANT    AVE.    1X1     TOTAL    AVE.     WGT./    LBS     KGS
CODE     NAME     PER-    ABS.    WGT.     WGT.     UNIT     PER     PER
                  CENT    PLOT    GMS/20   /PLOT    COVER    ACRE    HA.
                  COVER   FREQ.   SQ.FT.   OCCUR-   AREA
                  AREA    BASE             RENCES
                          20
*******************************************************************************
  6   SHRUBS
        ARTR        8.30      9.
  3   PER GRASS
        AGSM        1.10     20.   19.87      .99      .90   95.40   106.94
        POSE         .93     17.    4.80      .24      .26   23.04    25.83
        STCO        1.45     14.   10.21      .51      .35   49.02    54.95
                 TOTAL PERENNIAL GRASS PRODUCTION = 167.46   187.72
  2   PER FORBS
        AGGL         .01      1.
        SPCO         .06      8.
             PERENNIAL FORBS =       .54      .03      .45    2.59     2.90
  5   ANN GRASS
        BRTE         .14     15.
        VUOC         .06      8.
               ANNUAL GRASSES =     4.84      .24     1.21   23.24    26.05
  4   ANN FORBS
        DEPI         .02      2.
        LARE         .01      1.
        LEDE         .03      5.
        MIGR         .47     19.
        PLPA         .02      4.
                 ANNUAL FORBS =    12.32      .62     1.15   59.15    66.31

           ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 252.44   282.99



     PRECIPITATION DATA                  PRODUCTION ESTIMATES OF SHRUBS
     RAIN GAUGE                          AND WOODY MAT FORM PLANTS
    ************************             *********************************
     OCT 15 TP APR 15 =  2.52              ARTR            261.93   293.63
     APR 15 TO JULY 1 =  4.20              UPPU              1.06     1.19
     JULY 1 TO SEPT 1 =  1.32              CHVI              6.44     7.22
     SEPT 1 TO OCT 15 =   .93
     SEASON LONG TOTAL=  8.97
     LONG TERM AVERAGE= 10.22

                           TOTAL SHRUB PRODUCTION =  269.43   302.04



                                 TOTAL PRODUCTION =  521.87   585.02
                                 ************************************
```

```
 1004.   MGRAW FLAT    14 AUGUST     1981     IN NATIVE

                           NUMBER OF PLOTS = 20
                             PLOT SIZE 1X1
PLANT    PLANT    AVE.   1X1     TOTAL    AVE.    WGT./    LBS    KGS
CODE     NAME     PER-   ABS.    WGT.     WGT.    UNIT     PER    PER
                  CENT   PLOT    GMS/20   /PLOT   COVER    ACRE   HA.
                  COVER  FREQ.   SQ.FT.   OCCUR-  AREA
                  AREA   BASE             RENCES
                         20
**********************************************************************
  6  SHRUBS
       ARTR      16.34    17.
       CHVI        .18     2.
       PHHO       2.59    11.
  3  PER GRASS
       AGSM        .59    16.   14.15      .71     1.20   67.94    76.16
       PUFE       1.61    11.   15.19      .76      .47   72.93    81.75
       POSE        .10     1.     .37      .02      .19    1.77     1.98
                 TOTAL PERENNIAL GRASS PRODUCTION = 142.64   159.90
  2  PER FORBS
       CAAN        .03     5.
       CRAC        .01     1.
       MAGL        .01     1.
       SPCO        .02     1.
       VIAM        .26    15.
              PERENNIAL FORBS =  11.50     .57     1.85   55.21    61.89

          ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 197.85  221.79


    PRECIPITATION DATA                PRODUCTION ESTIMATES OF SHRUBS
    RAIN GAUGE                        AND WOODY MAT FORM PLANTS
  ************************            *********************************
    OCT 15 TP APR 15 = 2.64             ARTR              469.21  525.98
    APR 15 TO JULY 1 = 4.64             CHVI               12.84   14.39
    JULY 1 TO SEPT 1 = 1.01
    SEPT 1 TO OCT 15 = 1.00
    SEASON LONG TOTAL= 9.29
    LONG TERM AVERAGE= 9.57

                           TOTAL SHRUB PRODUCTION =  482.04   540.37


                                 TOTAL PRODUCTION =  679.89   762.16
                                 **********************************
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1004.   MGRAW FLAT    14 AUGUST     1981      OUT NATIVE

                         NUMBER OF PLOTS = 20
                             PLOT SIZE 1X1
PLANT    PLANT    AVE.     1X1      TOTAL    AVE.     WGT./    LBS      KGS
CODE     NAME     PER-     ABS.     WGT.     WGT.     UNIT     PER      PER
                  CENT     PLOT     GMS/20   /PLOT    COVER    ACRE     HA.
                  COVER    FREQ.    SQ.FT.   OCCUR-   AREA
                  AREA     BASE              RENCES
                           20
**************************************************************************
   6   SHRUBS
         ARTR      11.25      15.
         CHVI       1.40       2.
         PHHO       5.97      11.
   3   PER GRASS
         AGSM        .51      20.     8.92      .45      .87    42.83     48.01
         POFE       3.88      19.    20.38     1.02      .26    97.35    109.69
         POSE        .04       1.      .24      .01      .34     1.15      1.29
                  TOTAL PERENNIAL GRASS PRODUCTION = 141.83    158.99
   2   PER FORBS
         AGGL        .03       1.
         CAAN        .04       4.
         ERPU        .01       1.
         SPCO        .03       3.
         VIAM        .07       9.
               PERENNIAL FORBS =     2.51      .14      .91    13.49     15.12

         ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 155.32    174.11


    PRECIPITATION DATA                 PRODUCTION ESTIMATES OF SHRUBS
    RAIN GAUGE                         AND WOODY MAT FORM PLANTS
    **********************             ******************************
     OCT 15 TO APR 15 =  2.64            ARTR              301.21   337.65
     APR 15 TO JULY 1 =  4.64            CHVI               13.73    15.39
     JULY 1 TO SEPT 1 =  1.01            LEPU               11.22    12.58
     SEPT 1 TO OCT 15 =  1.00
     SEASON LONG TOTAL=  9.29
     LONG TERM AVERAGE=  9.57

                             TOTAL SHRUB PRODUCTION =  326.16   365.63


                                  TOTAL PRODUCTION =  481.48   539.74
                                  ***********************************
```

```
 920.     MED LODGE    23 AUGUST     1981        OUT NATIVE

                        NUMBER OF PLOTS = 20
                          PLOT SIZE 1X1
PLANT    PLANT    AVE.    1X1     TOTAL    AVE.    WGT./    LBS     KGS
CODE     NAME     PER-    ABS.    WGT.     WGT.    UNIT     PER     PER
                  CENT    PLOT    GMS/20   /PLOT   COVER    ACRE    HA.
                  COVER   FREQ.   SQ.FT.   OCCUR-  AREA
                  AREA    BASE             RENCES
                          20
*******************************************************************************
   6   SHRUBS
         ARTR       2.06     3.
         JUOS      20.00     6.
   3   PER GRASS
         AGSP        .01     2.      .20     .01    1.00      .96     1.08
         FEID        .02     1.      .23     .01     .58     1.10     1.23
         POFE        .15     6.     3.87     .19    1.25    18.58    20.83
         POSE        .04     3.      .51     .03     .73     2.44     2.74
         STCO        .03     1.      .18     .01     .36      .86      .96
                  TOTAL PERENNIAL GRASS PRODUCTION =       23.94    26.84
   2   PER FORBS
         LUAR        .03     1.
         SEST        .01     2.
               PERENNIAL FORBS =     .88     .04    1.10     4.22     4.73
   4   ANN FORBS
         LEDE        .07    10.
                  ANNUAL FORBS =    1.39     .07     .93     6.67     7.48

                ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION =   34.83    39.04


      PRECIPITATION DATA
      RAIN GAUGE
    ***********************
      OCT 15 TP APR 15 =  4.60
      APR 15 TO JULY 1 =  6.62
      JULY 1 TO SEPT 1 =  1.10
      SEPT 1 TO OCT 15 =  2.20
      SEASON LONG TOTAL= 14.52
      LONG TERM AVERAGE= 14.21
 920.    MED LODGE     23 AUGUST     1961          IN SPRAY

                    NUMBER OF PLOTS = 20
                       PLOT SIZE 1X1
PLANT    PLANT    AVE.    1X1    TOTAL    AVE.    WGT./    LBS    KGS
CODE     NAME     PER-    ABS.   WGT.     WGT.    UNIT     PER    PER
                  CENT    PLOT   GMS/20   /PLOT   COVER    ACRE   HA.
                  COVER   FREQ.  SQ.FT.   OCCUR-  AREA
                  AREA    BASE            RENCES
                          20
**************************************************************************
  6   SHRUBS
        ARTR      6.88      6.
        JUDS      4.25      1.
  3   PER GRASS
        AGSP       .18      5.   12.53      .63    3.58   60.16    67.44
        KOCR       .03      1.     .34      .02     .68    1.63     1.83
        POFE       .55     11.   40.10     2.01    3.65  192.54   215.84
        POSE       .07      5.    1.04      .05     .80    4.99     5.59
                  TOTAL PERENNIAL GRASS PRODUCTION = 259.32   290.70
  2   PER FORBS
        LOOR       .04      1.
        MAGR       .01      1.
        SEST       .06      2.
              PERENNIAL FORBS =   6.81      .34    3.58   32.69    36.65
  5   ANN GRASS
        BRTE       .01      2.
               ANNUAL GRASSES =    .06      .00     .30     .28      .31
  4   ANN FORBS
        DEPI       .01      1.
        LEDE       .09      8.
                 ANNUAL FORBS =   1.19      .06     .66    5.71     6.40

            ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 298.00   334.06


   PRECIPITATION DATA
   RAIN GAUGE
*************************
   OCT 15 TP APR 15 =  4.60
   APR 15 TO JULY 1 =  6.62
   JULY 1 TO SEPT 1 =  1.10
   SEPT 1 TO OCT 15 =  2.20
   SEASON LONG TOTAL= 14.52
   LONG TERM AVERAGE= 14.21
  2301.    MESA ANT      7 AUGUST     1981      IN NATIVE

                         NUMBER OF PLOTS = 20
                            PLOT SIZE 1X1
PLANT    PLANT     AVE.     1X1     TOTAL     AVE.     WGT./     LBS    KGS
CODE     NAME      PER-     ABS.    WGT.      WGT.     UNIT      PER    PER
                   CENT     PLOT    GMS/20    /PLOT    COVER     ACRE   HA.
                   COVER    FREQ.   SQ.FT.    OCCUR-   AREA
                   AREA     BASE              RENCES
                            20
*****************************************************************************
    6   SHRUBS
          ARTR     21.50     13.
          CELA       .25      1.
          CHVI       .25      1.
          LEPU       .05      1.
          PHHO      2.48      8.
    3   PER GRASS
          AGSM       .48     17.    12.63      .63      1.32     60.64    67.98
          POSE       .19      4.     3.26      .16       .86     15.65    17.54
          SIHY       .11      2.      .42      .02       .19      2.01     2.25

           ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION =    78.30    87.77


     PRECIPITATION DATA                PRODUCTION ESTIMATES OF SHRUBS
     RAIN GAUGE                        AND WOODY MAT FORM PLANTS
     ************************          **********************************
      OCT 15 TP APR 15 =  2.14           ARTR              257.44   288.59
      APR 15 TO JULY 1 =  2.85           CELA                2.91     3.26
      JULY 1 TO SEPT 1 =  1.25           CHVI                9.53    10.69
      SEPT 1 TO OCT 15 =   .93           ERCA                5.87     6.58
      SEASON LONG TOTAL=  7.17           PHHO                7.13     7.99
      LONG TERM AVERAGE=  7.53

                             TOTAL SHRUB PRODUCTION =   282.88   317.11


                                   TOTAL PRODUCTION =   361.18   404.88
                                   ***********************************
```

```
2301.    MESA ANT        7 AUGUST     1981      OUT NATIVE

                          NUMBER OF PLOTS = 20
                             PLOT SIZE 1X1
PLANT     PLANT     AVE.     1X1      TOTAL     AVE.     WGT./     LBS     KGS
CODE      NAME      PER-     ABS.     WGT.      WGT.     UNIT      PER     PER
                    CENT     PLOT     GMS/20    /PLOT    COVER     ACRE    HA.
                    COVER    FREQ.    SQ.FT.    OCCUR-   AREA
                    AREA     BASE               RENCES
                             20
*******************************************************************************
  6   SHRUBS
         ARTR      14.35       9.
         CHVI        .13       1.
         EROV        .08       1.
         PHHO        .52       7.
  3   PER GRASS
         AGSM        .58      20.    10.63      .53      .91     51.04    57.22
         CAFI        .19       7.     1.16      .06      .31      5.56     6.23
         POSE        .12       5.     1.03      .05      .45      4.94     5.54
         SIHY        .06       3.     1.04      .05      .87      4.99     5.59
                    TOTAL PERENNIAL GRASS PRODUCTION =          66.53    74.58
  2   PER FORBS
         MAGR        .01       1.
               PERENNIAL FORBS =       .08      .00      .40       .38      .43

            ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION =            66.91    75.01


   PRECIPITATION DATA                  PRODUCTION ESTIMATES OF SHRUBS
   RAIN GAUGE                          AND WOODY MAT FORM PLANTS
 ************************             ********************************
  OCT 15 TP APR 15 =   2.14              ARTR                220.66   247.36
  APR 15 TO JULY 1 =   2.85              CELA                  1.70     1.90
  JULY 1 TO SEPT 1 =   1.25              CHVI                 11.13    12.48
  SEPT 1 TO OCT 15 =    .93              ERCA                 54.72    61.34
  SEASON LONG TOTAL=   7.17              EROV                  1.25     1.40
  LONG TERM AVERAGE=   7.53              HAAC                  3.79     4.25
                                         OPPO                  2.48     2.78
                                         PHHO                  7.17     8.04

                          TOTAL SHRUB PRODUCTION =          302.90   339.55


                                TOTAL PRODUCTION =          369.81   414.55
                                *************************************
 1503.   NORTH BUTE    20 JULY      1981        RELICT

                         NUMBER OF PLOTS = 20
                           PLOT SIZE 1X1
PLANT    PLANT    AVE.   1X1     TOTAL    AVE.    WGT./    LBS     KGS
CODE     NAME     PER-   ABS.    WGT.     WGT.    UNIT     PER     PER
                  CENT   PLOT    GMS/20   /PLOT   COVER    ACRE    HA.
                  COVER  FREQ.   SQ.FT.   OCCUR-  AREA
                  AREA   BASE             RENCES
                         20
*****************************************************************************
   6  SHRUBS
        ARTR       3.70      5.
   3  PER GRASS
        AGSP       1.24      9.  33.53     1.68    1.35  161.00   180.48
        BOGR        .01      1.    .19      .01     .95     .91     1.02
        CAEL       1.80     12.  17.88      .89     .50   85.85    96.24
        STCO       1.98     13.  41.10     2.06    1.04  197.34   221.22
                  TOTAL PERENNIAL GRASS PRODUCTION = 445.10   498.96
   2  PER FORBS
        SPCO        .03      4.
        TRDU        .01      1.
              PERENNIAL FORBS =   3.92      .20    6.53   18.82    21.10
   5  ANN GRASS
        BRTE        .18      1.
           ANNUAL GRASSES =   1.16      .06     .33    5.56     6.23

        ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 469.48   526.29


   PRECIPITATION DATA                 PRODUCTION ESTIMATES OF SHRUBS
   RAIN GAUGE                         AND WOODY MAT FORM PLANTS
   ***********************            *********************************
    OCT 15 TP APR 15 = 4.63             ARTR               240.87   270.02
    APR 15 TO JULY 1 = 6.92             OPPO                 3.79     4.25
    JULY 1 TO SEPT 1 = 1.35             PHHO                  .65      .73
    SEPT 1 TO OCT 15 = 1.17
    SEASON LONG TOTAL=14.07
    LONG TERM AVERAGE=10.98

                                TOTAL SHRUB PRODUCTION =  245.32   275.00


                                      TOTAL PRODUCTION =  714.80   801.29
                                      ***********************************
```

```
104.    OWL DRAW      6 AUGUST    1981     IN ARNO

                    NUMBER OF PLOTS = 20
                      PLOT SIZE 1X1
PLANT    PLANT    AVE.    1X1    TOTAL    AVE.    WGT./    LBS     KGS
CODE     NAME     PER-    ABS.   WGT.     WGT.    UNIT     PER     PER
                  CENT    PLOT   GMS/20   /PLOT   COVER    ACRE    HA.
                  COVER   FREQ.  SQ.FT.   OCCUR-  AREA
                  AREA    BASE            RENCES
                          20
****************************************************************************
  6   SHRUBS
        ARTR        .10      1.
        ARNO      13.28     15.
        CHVI        .04      2.
        JUOS        .10      1.
        MAVI        .05      1.
        PHHO        .09      9.
  3   PER GRASS
        AGSM        .18     10.     3.31     .17     .95   15.89    17.81
        AGSP        .25      1.     2.66     .13     .53   12.77    14.32
        KOCR        .30      9.     1.85     .09     .31    8.88     9.95
        POSE        .26      9.     1.00     .05     .19    4.80     5.38
                  TOTAL PERENNIAL GRASS PRODUCTION =       42.34    47.46
  2   PER FORBS
        ALTE        .01      1.
        ARHO        .02      1.
        ASMI        .08      6.
        EROC        .07      7.
        HAAC        .20      1.
        VINU        .05      1.
              PERENNIAL FORBS =     5.10     .26     .61   24.48    27.44

           ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION =        66.82    74.91


     PRECIPITATION DATA            PRODUCTION ESTIMATES OF SHRUBS
     RAIN GAUGE                    AND WOODY MAT FORM PLANTS
     ************************      ********************************
    OCT 15 TP APR 15 = 3.43          ARHO               13.86    15.53
    APR 15 TO JULY 1 = 3.92          ARNO              600.14   672.76
    JULY 1 TO SEPT 1 = 2.02          ARTR               30.12    33.76
    SEPT 1 TO OCT 15 =  .64          CHVI                3.41     3.82
    SEASON LONG TOTAL= 10.01         HAAC                3.23     3.62
    LONG TERM AVERAGE= 9.66          PHHO               12.53    14.05

                        TOTAL SHRUB PRODUCTION =       663.29   743.55


                              TOTAL PRODUCTION =  730.11   818.45
                              ************************************
```

```
104.    OWL DRAW      6 AUGUST    1981      OUT ARNO

                    NUMBER OF PLOTS = 20
                       PLOT SIZE 1X1
PLANT    PLANT    AVE.    1X1     TOTAL    AVE.     WGT./    LBS    KGS
CODE     NAME     PER-    ABS.    WGT.     WGT.     UNIT     PER    PER
                  CENT    PLOT    GMS/20   /PLOT    COVER    ACRE   HA.
                  COVER   FREQ.   SQ.FT.   OCCUR-   AREA
                  AREA    BASE             RENCES
                          20
*******************************************************************************
  6   SHRUBS
        ARTR        .10      1.
        ARNO      11.32     13.
        CHVI        .25      1.
        JUOS        .25      1.
        PHHO        .12      5.
  3   PER GRASS
        AGSM        .78     20.    12.19      .61      .78    58.53     65.61
        KOCR        .25      5.     1.68      .08      .34     8.06      9.04
        POSE        .37     11.     2.61      .13      .35    12.53     14.05
                 TOTAL PERENNIAL GRASS PRODUCTION =          79.12     88.69
  2   PER FORBS
        ALCE        .01      1.
        ALTE        .02      2.
        ARHO        .01      1.
        ASPU        .04      1.
        CANU        .01      2.
        ERPU        .11     10.
        VINU        .01      1.
           PERENNIAL FORBS =      4.22      .21     1.06    20.26     22.71

          ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION =         99.38    111.40


     PRECIPITATION DATA                    PRODUCTION ESTIMATES OF SHRUBS
     RAIN GAUGE                            AND WOODY MAT FORM PLANTS
     ************************              **********************************
     OCT 15 TP APR 15 =  3.43              ARHO              3.52      3.94
     APR 15 TO JULY 1 =  3.93              ARNO            161.23    180.74
     JULY 1 TO SEPT 1 =  2.02              ARTR            198.51    222.53
     SEPT 1 TO OCT 15 =   .64              HAAC               .52       .58
     SEASON LONG TOTAL= 10.01              PHHO             12.67     14.20
     LONG TERM AVERAGE=  9.66

                           TOTAL SHRUB PRODUCTION =  376.45    422.01


                                  TOTAL PRODUCTION =  475.83    533.41
                                  ***********************************
```

```
 104.    OWL DRAW      6 AUGUST     1981      IN ARTR

                        NUMBER OF PLOTS = 20
                          PLOT SIZE 1X1
LANT     PLANT    AVE.    1X1     TOTAL     AVE.    WGT./    LBS     KGS
ODE      NAME     PER-    ABS.    WGT.      WGT.    UNIT     PER     PER
                  CENT    PLOT    GMS/20    /PLOT   COVER    ACRE    HA.
                  COVER   FREQ.   SQ.FT.    OCCUR-  AREA
                  AREA    BASE              RENCES
                          20
**************************************************************************
  6   SHRUBS
        ARNO        .30      1.
        ARTR      12.14     11.
        PHHO        .13      8.
  3   PER GRASS
        AGSM        .75     20.   22.08     1.10     1.47  106.02   118.85
        KOCR        .69     10.    6.30      .32      .46   30.25    33.91
        POSE        .83     19.    9.29      .46      .56   44.60    50.00
                  TOTAL PERENNIAL GRASS PRODUCTION =      180.87   202.76
  2   PER FORBS
        ALTE        .02      3.
        BASA        .03      1.
        CANU        .01      2.
        EROC        .18     12.
        VIAM        .02      2.
              PERENNIAL FORBS =     5.98      .30     1.20   28.71    32.18
  4   ANN FORBS
        DEPI        .01      1.
                ANNUAL FORBS =       .20      .01     2.00     .96     1.08

         ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION =        210.54   236.02


   PRECIPITATION DATA                  PRODUCTION ESTIMATES OF SHRUBS
   RAIN GAUGE                          AND WOODY MAT FORM PLANTS
 ***********************               ********************************
  OCT 15 TP APR 15 =  3.43               ARNO                44.25    49.61
  APR 15 TO JULY 1 =  3.92               ARTR               419.66   470.44
  JULY 1 TO SEPT 1 =  2.02               CELA                  .92     1.03
  SEPT 1 TO OCT 15 =   .64               CHVI                  .63      .70
  SEASON LONG TOTAL= 10.01               PHHO                 4.44     4.98
  LONG TERM AVERAGE=  9.66

                          TOTAL SHRUB PRODUCTION =  469.91   526.77


                                TOTAL PRODUCTION =  680.45   762.78
                                ***********************************
   104.    OWL DRAW     6 AUGUST     1981     OUT ARTR

                       NUMBER OF PLOTS = 20
                          PLOT SIZE 1X1
 PLANT    PLANT    AVE.   1X1    TOTAL    AVE.    WGT./    LBS    KGS
 CODE     NAME     PER-   ABS.   WGT.     WGT.    UNIT     PER    PER
                   CENT   PLOT   GMS/20   /PLOT   COVER    ACRE   HA.
                   COVER  FREQ.  SQ.FT.   OCCUR-  AREA
                   AREA   BASE            RENCES
                          20
****************************************************************************
   6  SHRUBS
        ARNO      1.00      1.
        ARTR     13.74      9.
        PHHO       .21      5.
   3  PER GRASS
        AGSM       .70     20.     9.26     .46     .66   44.46    49.84
        KOCR       .51      9.     4.50     .23     .44   21.60    24.21
        POSE      1.28     20.    14.53     .73     .57   69.76    78.20
               TOTAL PERENNIAL GRASS PRODUCTION =  135.82   152.25
   2  PER FORBS
        ALTE       .01      1.
        EROC       .04      3.
        MAGL       .01      1.
          PERENNIAL FORBS =    1.20     .06    1.20    5.76     6.46
   4  ANN FORBS
        MIGR       .05      8.
             ANNUAL FORBS =     .33     .02     .33    1.58     1.77

      ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 143.16  160.48


   PRECIPITATION DATA                 PRODUCTION ESTIMATES OF SHRUBS
   RAIN GAUGE                         AND WOODY MAT FORM PLANTS
  *********************               ******************************
  OCT 15 TP APR 15 =  3.43              ARNO           20.94    23.48
  APR 15 TO JULY 1 =  3.92              ARTR          725.59   813.39
  JULY 1 TO SEPT 1 =  2.02              CHVI             .34      .38
  SEPT 1 TO OCT 15 =   .64              PHHO            5.99     6.72
  SEASON LONG TOTAL= 10.01
  LONG TERM AVERAGE=  9.66

                       TOTAL SHRUB PRODUCTION =  752.87   843.97


                            TOTAL PRODUCTION =  896.03 1004.45
                            ***********************************
```

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406.    REDWASH 2     3 AUGUST     1981      IN AGSM

                      NUMBER OF PLOTS = 20
                         PLOT SIZE 1X1
PLANT    PLANT    AVE.   1X1     TOTAL    AVE.    WGT./   LBS    KGS
CODE     NAME     PER-   ABS.    WGT.     WGT.    UNIT    PER    PER
                  CENT   PLOT    GMS/20   /PLOT   COVER   ACRE   HA.
                  COVER  FREQ.   SQ.FT.   OCCUR-  AREA
                  AREA   BASE             RENCES
                         20
**************************************************************************
   6  SHRUBS
        ARTR      19.10      7.
        EROV        .03      1.
        CHVI        .40      3.
        PHHO        .68      5.
        TECA        .83      3.
   3  PER GRASS
        AGSM        .69     18.   11.52     .58     .83   55.31    62.00
        KOCR        .02      1.     .70     .04    2.33    3.36     3.77
        ORHY        .52      6.    3.60     .18     .35   17.28    19.37
        POSE        .24      6.    1.73     .09     .37    8.30     9.30
        STCO        .27      5.    7.23     .36    1.34   34.71    38.91
                 TOTAL PERENNIAL GRASS PRODUCTION = 118.96   133.35
   2  PER FORBS
        CHDO        .01      1.
        ARHO2       .02      3.
             PERENNIAL FORBS =   1.32     .07    2.64    6.33     7.10

          ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 125.29   140.45


    PRECIPITATION DATA                PRODUCTION ESTIMATES OF SHRUBS
    RAIN GAUGE                        AND WOODY MAT FORM PLANTS
    ************************          ********************************
     OCT 15 TP APR 15 = 2.46              ARTR            39.12    43.86
     APR 15 TO JULY 1 = 2.34              CELA              .26      .29
     JULY 1 TO SEPT 1 = 1.73              CHNA            19.21    21.54
     SEPT 1 TO OCT 15 = 2.35              CHVI            45.09    50.55
     SEASON LONG TOTAL= 8.88              ERBR             7.15     8.01
     LONG TERM AVERAGE= 7.11              EROV             9.61    10.78
                                          OPPO             7.03     7.88
                                          PHHO            26.07    29.23
                                          TECA            13.00    14.57

                          TOTAL SHRUB PRODUCTION =  166.54   186.70


                                TOTAL PRODUCTION =  291.83   327.15
                                ***********************************
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406.    REDWASH 2      3 AUGUST      1981      OUT AGSM

                          NUMBER OF PLOTS = 20
                            PLOT SIZE 1X1
PLANT    PLANT    AVE.     1X1     TOTAL    AVE.     WGT./    LBS     KGS
CODE     NAME     PER-     ABS.    WGT.     WGT.     UNIT     PER     PER
                  CENT     PLOT    GMS/20   /PLOT    COVER    ACRE    HA.
                  COVER    FREQ.   SQ.FT.   OCCUR-   AREA
                  AREA     BASE             RENCES
                           20
*****************************************************************************
   6  SHRUBS
        ARTR         .80       1.
        CHVI         .44       7.
        ERBR         .48       6.
        PHHO         .25       2.
        XASA         .21       2.
   3  PER GRASS
        AGSM         .20       8.     5.26      .26     1.32    25.25     28.31
        AGSP         .33       4.     4.91      .25      .74    23.57     26.42
        STCO         .81      10.    16.31      .82     1.01    78.31     87.79
        SIHY         .01       1.      .48      .02     2.40     2.30      2.58
        ORHY         .19       5.     4.37      .22     1.15    20.98     23.52

     ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION =  150.41  168.61


   PRECIPITATION DATA                  PRODUCTION ESTIMATES OF SHRUBS
   RAIN GAUGE                          AND WOODY MAT FORM PLANTS
  ************************             *******************************
   OCT 15 TP APR 15 =  2.46               ARTR                43.83     49.14
   APR 15 TO JULY 1 =  2.34               CELA                  .22       .25
   JULY 1 TO SEPT 1 =  1.73               CHNA                 3.36      3.77
   SEPT 1 TO OCT 15 =  2.35               CHVI                25.54     28.62
   SEASON LONG TOTAL=  8.88               ERBR                12.60     14.13
   LONG TERM AVERAGE=  7.11               EROV                13.01     14.59
                                          PHHO                15.76     17.67
                                          TECA                 5.67      6.36

                          TOTAL SHRUB PRODUCTION =  120.00  134.52


                               TOTAL PRODUCTION =  270.41  303.13
                               ***********************************
```

```
406.    REDWASH 2    3 AUGUST    1981     IN AGSP

                    NUMBER OF PLOTS = 20
                      PLOT SIZE 1X1
PLANT    PLANT    AVE.    1X1    TOTAL    AVE.    WGT./    LBS    KGS
CODE     NAME     PER-    ABS.   WGT.     WGT.    UNIT     PER    PER
                  CENT    PLOT   GMS/20   /PLOT   COVER    ACRE   HA.
                  COVER   FREQ.  SQ.FT.   OCCUR-  AREA
                  AREA    BASE            RENCES
                          20
*****************************************************************************
  6  SHRUBS
       ARTR      9.35      5.
       CELA       .25      1.
       CHNA       .08      1.
       CHVI       .13      1.
  2  PER FORBS
       ARHO       .01      1.
       CHDO       .01      1.
       MAGL       .01      1.
       PECL       .04      3.
           PERENNIAL FORBS =   3.54     .18    3.22   16.99    19.05
  3  PER GRASS
       AGSM       .26      9.    5.47     .27    1.07   26.26    29.44
       AGSP       .25      4.    7.72     .39    1.54   37.06    41.54
       ORHY       .29      5.   15.77     .79    2.72   75.72    84.88
       POSE       .07      3.    1.81     .09    1.39    8.69     9.74
       STCO       .93     14.   18.17     .91     .98   87.24    97.80

     ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 251.96   282.45


  PRECIPITATION DATA                  PRODUCTION ESTIMATES OF SHRUBS
  RAIN GAUGE                          AND WOODY MAT FORM PLANTS
  ***********************             ******************************
  OCT 15 TP APR 15 = 2.46               ARTR              39.12    43.86
  APR 15 TO JULY 1 = 2.34               CELA                .26      .29
  JULY 1 TO SEPT 1 = 1.73               CHVI              45.09    50.55
  SEPT 1 TO OCT 15 = 2.35               ERBR               7.15     8.01
  SEASON LONG TOTAL= 8.88               PHHO              26.07    29.23
  LONG TERM AVERAGE= 7.11               TECA              13.00    14.57

                     TOTAL SHRUB PRODUCTION =  130.69   146.50


                           TOTAL PRODUCTION =  382.65   428.95
                           *********************************
```

```
   406.    REDWASH 2   3 AUGUST    1981        OUT AGSP

                          NUMBER OF PLOTS = 20
                            PLOT SIZE 1X1
 PLANT    PLANT    AVE.     1X1     TOTAL    AVE.     WGT./    LBS    KGS
 CODE     NAME     PER-     ABS.    WGT.     WGT.     UNIT     PER    PER
                   CENT     PLOT    GMS/20   /PLOT    COVER    ACRE   HA.
                   COVER    FREQ.   SQ.FT.   OCCUR-   AREA
                   AREA     BASE             RENCES
                            20
***************************************************************************
   6   SHRUBS
         ARTR       2.50      1.
         CELA        .13      1.
         CHVI       1.75      3.
         EROV        .33      3.
         PHHO        .10      2.
         TECA        .50      1.
   3   PER GRASS
         AGSM        .24     11.    4.17      .21      .87   20.02    22.44
         AGSP        .23      5.   11.55      .58     2.57   55.45    62.16
         ORHY        .18      5.    6.08      .30     1.74   29.19    32.72
         STCO        .88     11.   23.92     1.20     1.36  114.85   128.75
                   TOTAL PERENNIAL GRASS PRODUCTION =  219.51   246.07
   2   PER FORBS
         ASPU        .03      1.
         UNK         .01      1.
               PERENNIAL FORBS =     .77      .04     1.28    3.69     4.14

               ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 223.20   250.21


    PRECIPITATION DATA             PRODUCTION ESTIMATES OF SHRUBS
    RAIN GAUGE                     AND WOODY MAT FORM PLANTS
   ***********************         ********************************
    OCT 15 TP APR 15 =  2.46         ARTR               43.83    49.14
    APR 15 TO JULY 1 =  2.34         CELA                 .22      .25
    JULY 1 TO SEPT 1 =  1.73         CHNA                3.36     3.77
    SEPT 1 TO OCT 15 =  2.35         CHVI               25.54    28.62
    SEASON LONG TOTAL=  8.88         ERBR               12.60    14.13
    LONG TERM AVERAGE=  7.11         EROV               13.01    14.59
                                     TECA                5.67     6.36
                                     PHHO               15.76    17.67

                         TOTAL SHRUB PRODUCTION =  120.00   134.52


                              TOTAL PRODUCTION =  343.20   384.73
                              ***********************************
```

```
1504.    ROUND TOP    20 JULY     1981     RELIC

                    NUMBER OF PLOTS = 20
                       PLOT SIZE 1X1
PLANT    PLANT    AVE.   1X1    TOTAL    AVE.    WGT./   LBS     KGS
CODE     NAME     PER-   ABS.   WGT.     WGT.    UNIT    PER     PER
                  CENT   PLOT   GMS/20   /PLOT   COVER   ACRE    HA.
                  COVER  FREQ.  SQ.FT.   OCCUR-  AREA
                  AREA   BASE            RENCES
                         20
***********************************************************************
  6   SHRUBS
        XASA        .04     3.
  3   PER GRASS
        AGSP       3.45    18.   72.06    3.60    1.05  346.00   387.87
        CAFI        .52    14.   12.36     .62    1.20   59.34    66.52
        KOCR        .67     7.   15.82     .79    1.19   75.96    85.15
        POSE        .09     3.     .49     .02     .29    2.35     2.63
        STCO        .03     1.     .91     .05    1.82    4.36     4.89
                  TOTAL PERENNIAL GRASS PRODUCTION = 488.01   547.06
  2   PER FORBS
        ALTE        .04     7.
        ZIVE        .02     2.
            PERENNIAL FORBS =      .69     .03     .58    3.31     3.71
  4   ANN FORBS
        DEPI        .04     6.
                ANNUAL FORBS =     .58     .03     .73    2.78     3.12

          ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 494.10   553.89


     PRECIPITATION DATA              PRODUCTION ESTIMATES OF SHRUBS
     RAIN GAUGE                      AND WOODY MAT FORM PLANTS
    ************************         ********************************
    OCT 15 TP APR 15 =  5.83           ARFR                3.01     3.38
    APR 15 TO JULY 1 =  6.37           ARTR              104.34   116.96
    JULY 1 TO SEPT 1 =  1.47           CHVI               15.73    17.63
    SEPT 1 TO OCT 15 =  1.02
    SEASON LONG TOTAL= 14.69
    LONG TERM AVERAGE= 11.90

                        TOTAL SHRUB PRODUCTION =  123.08   137.97


                              TOTAL PRODUCTION =  617.18   691.86
                              ************************************
```

```
1505.   SAND GULCH      9 JULY        1981       IN NATIVE

                          NUMBER OF PLOTS = 20
                             PLOT SIZE 1X10
PLANT    PLANT    AVE.    1X1     TOTAL    AVE.     WGT./    LBS     KGS
CODE     NAME     PER-    ABS.    WGT.     WGT.     UNIT     PER     PER
                  CENT    PLOT    GMS/20   /PLOT    COVER    ACRE    HA.
                  COVER   FREQ.   SQ.FT.   OCCUR-   AREA
                  AREA    BASE             RENCES
                          20
*****************************************************************************
   6   SHRUBS
         ATGA       9.01     20.   51.22     2.56      .28 245.94   275.70
   3   PER GRASS
         AGSM       1.89     14.   69.30     3.47     1.84 332.75   373.01
         POSE        .29     10.    4.48      .22      .77  21.51    24.11
         SIHY        .39      5.    9.42      .47     1.21  45.23    50.70
                 TOTAL PERENNIAL GRASS PRODUCTION = 399.49   447.83
   5   ANN GRASS
         BRJA        .03      3.
         BRTE        .11     10.
              ANNUAL GRASSES =      9.03      .45     3.34  43.35    48.60
   4   ANN FORBS
         CAMI        .02      2.
         DEPI        .03      5.
         LARE        .03      5.
         LEPE        .11     10.
                ANNUAL FORBS =      8.92      .45     2.55  42.83    48.01

            ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 731.61   820.13


     PRECIPITATION DATA               PRODUCTION ESTIMATES OF SHRUBS
     RAIN GAUGE                       AND WOODY MAT FORM PLANTS
    ************************          ******************************
    OCT 15 TP APR 15 =  3.88             OPPO               11.38   12.76
    APR 15 TO JULY 1 =  4.15
    JULY 1 TO SEPT 1 =  2.00
    SEPT 1 TO OCT 15 =  1.25
    SEASON LONG TOTAL= 11.28
    LONG TERM AVERAGE=  9.02

                         TOTAL SHRUB PRODUCTION =   11.38   12.76


                              TOTAL PRODUCTION =  742.99  832.89
                              ***********************************
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```
 1505.   SAND GULCH     9 JULY     1981      OUT NATIVE

                     NUMBER OF PLOTS = 20
                        PLOT SIZE 1X10
PLANT    PLANT    AVE.    1X1    TOTAL    AVE.    WGT./   LBS    KGS
CODE     NAME     PER-    ABS.   WGT.     WGT.    UNIT    PER    PER
                  CENT    PLOT   GMS/20   /PLOT   COVER   ACRE   HA.
                  COVER   FREQ.  SQ.FT.   OCCUR-  AREA
                  AREA    BASE            RENCES
                          20
*****************************************************************************
  6  SHRUBS
       ATGA       4.57     20.   23.23    1.16     .25 111.54   125.04
       OPPO        .15      2.
  3  PER GRASS
       AGSM       1.40     15.   29.79    1.49    1.07 143.04   160.35
       POSE        .55      8.    5.82     .29     .53  27.94    31.32
       ORHY        .02      1.     .37     .02    1.23   1.77     1.98
                  TOTAL PERENNIAL GRASS PRODUCTION = 172.75   193.65
  5  ANN GRASS
       BRTE        .96     19.
       VUOC        .01      1.
               ANNUAL GRASSES =  61.87    3.09    3.21 297.08   333.03
  4  ANN FORBS
       LARE        .05      9.
       LEPE        .06     11.
       PLPA        .02      4.
                ANNUAL FORBS =    1.69     .08     .70   8.11     9.09

        ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 589.48   660.81


  PRECIPITATION DATA                 PRODUCTION ESTIMATES OF SHRUBS
  RAIN GAUGE                         AND WOODY MAT FORM PLANTS
 ************************            *******************************
 OCT 15 TP APR 15 =  3.88              OPPO              7.91     8.87
 APR 15 TO JULY 1 =  4.15
 JULY 1 TO SEPT 1 =  2.00
 SEPT 1 TO OCT 15 =  1.25
 SEASON LONG TOTAL= 11.28
 LONG TERM AVERAGE=  9.02

                     TOTAL SHRUB PRODUCTION =    7.91     8.87


                          TOTAL PRODUCTION =  597.39   669.68
                          *********************************
  1009.   SHOS ANT 2   17 AUGUST   1981     IN NE

                        NUMBER OF PLOTS = 10
                          PLOT SIZE 1X1
PLANT    PLANT    AVE.    1X1    TOTAL     AVE.    WGT./    LBS     KGS
CODE     NAME     PER-    ABS.   WGT.      WGT.    UNIT     PER     PER
                  CENT    PLOT   GMS/10    /PLOT   COVER    ACRE    HA.
                  COVER   FREQ.  SQ.FT.    OCCUR-  AREA
                  AREA    BASE             RENCES
                          10
*************************************************************************
   6  SHRUBS
        ARTR     10.20      5.
        OPPO       .10      1.
   3  PER GRASS
        AGSM       .14      5.    1.23      .12      .88   11.81   13.24
        BOGR      2.14      6.    4.84      .48      .23   46.48   52.10
        POSE       .82      6.    1.70      .17      .21   16.32   18.29
        STCO       .08      1.     .11      .01      .14    1.05    1.18
                  TOTAL PERENNIAL GRASS PRODUCTION =       75.66   84.81
   2  PER FORBS
        ALTE       .01      1.
        SPCO       .02      1.
              PERENNIAL FORBS =    .11      .01      .37    1.05    1.18

          ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION =         76.71   85.99


     PRECIPITATION DATA                  PRODUCTION ESTIMATES OF SHRUBS
     RAIN GAUGE                          AND WOODY MAT FORM PLANTS
    ************************             ******************************
    OCT 15 TP APR 15 =  2.80               ARTR              203.54  228.17
    APR 15 TO JULY 1 =  4.88               OPPO               15.63   17.52
    JULY 1 TO SEPT 1 =  1.00               PHHO                4.12    4.62
    SEPT 1 TO OCT 15 =  1.36
    SEASON LONG TOTAL= 10.04
    LONG TERM AVERAGE=  8.32

                             TOTAL SHRUB PRODUCTION =  223.29  250.31


                                   TOTAL PRODUCTION =  300.00  336.30
                                   ************************************
```

```
1009.   SHOS ANT 2   17 AUGUST    1981    IN NW

                    NUMBER OF PLOTS = 10
                      PLOT SIZE 1X1
PLANT   PLANT   AVE.   1X1    TOTAL   AVE.   WGT./   LBS   KGS
CODE    NAME    PER-   ABS.   WGT.    WGT.   UNIT    PER   PER
                CENT   PLOT   GMS/10  /PLOT  COVER   ACRE  HA.
                COVER  FREQ.  SQ.FT.  OCCUR- AREA
                AREA   BASE           RENCES
                       10
*****************************************************************************
  6  SHRUBS
       ARTR     2.40     2.
       OPPO      .10     1.
  3  PER GRASS
       AGSM      .03     1.     .25    .03     .83    2.40     2.69
       BOGR     2.39     6.    3.79    .38     .16   36.39    40.79
       POSE      .22     4.     .29    .03     .13    2.78     3.12
               TOTAL PERENNIAL GRASS PRODUCTION =     41.57    46.60
  2  PER FORBS
       SPCO      .02     1.
            PERENNIAL FORBS =  1.08    .11    5.40   10.37    11.62
  4  ANN FORBS
       LUPU      .02     1.
               ANNUAL FORBS =   .67    .07    3.35    6.43     7.21

          ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION =   58.37    65.43


   PRECIPITATION DATA               PRODUCTION ESTIMATES OF SHRUBS
   RAIN GAUGE                       AND WOODY MAT FORM PLANTS
   ***********************          *******************************
    OCT 15 TP APR 15 = 2.80           ARTR            203.54  228.17
    APR 15 TO JULY 1 = 4.88           OPPO             15.63   17.52
    JULY 1 TO SEPT 1 = 1.00           PHHO              4.12    4.62
    SEPT 1 TO OCT 15 = 1.36
    SEASON LONG TOTAL= 10.04
    LONG TERM AVERAGE= 8.32

                       TOTAL SHRUB PRODUCTION =  223.29  250.31


                            TOTAL PRODUCTION =  281.66  315.74
                            ************************************
```

```
1009.   SHOS ANT 2   17 AUGUST    1981      IN SE

                    NUMBER OF PLOTS = 10
                      PLOT SIZE 1X1
PLANT   PLANT   AVE.   1X1    TOTAL    AVE.    WGT./   LBS    KGS
CODE    NAME    PER-   ABS.   WGT.     WGT.    UNIT    PER    PER
                CENT   PLOT   GMS/10   /PLOT   COVER   ACRE   HA.
                COVER  FREQ.  SQ.FT.   OCCUR-  AREA
                AREA   BASE            RENCES
                       10
*************************************************************************
  6  SHRUBS
       ARTR     4.84    3.
       OPPO      .80    1.
  3  PER GRASS
       AGSM      .01    1.     .38     .04    3.80    3.64    4.08
       BOGR     2.36    9.    6.13     .61     .26   58.86   65.98
       POSE      .61    5.    1.45     .15     .24   13.92   15.60
                TOTAL PERENNIAL GRASS PRODUCTION =   76.42   85.67
  5  ANN GRASS
       VUOC      .01    1.
              ANNUAL GRASSES =     .01     .00     .10     .09     .10
  4  ANN FORBS
       LUPU      .02    1.
       PLPA      .01    1.
                ANNUAL FORBS =     .12     .01     .40    1.15    1.29

          ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION =   77.66   87.06


   PRECIPITATION DATA              PRODUCTION ESTIMATES OF SHRUBS
   RAIN GAUGE                      AND WOODY MAT FORM PLANTS
************************           ********************************
  OCT 15 TP APR 15 =  2.80           ARTR           203.54  228.17
  APR 15 TO JULY 1 =  4.88           OPPO            15.63   17.52
  JULY 1 TO SEPT 1 =  1.00           PHHO             4.12    4.62
  SEPT 1 TO OCT 15 =  1.36
  SEASON LONG TOTAL= 10.04
  LONG TERM AVERAGE=  8.32

                        TOTAL SHRUB PRODUCTION =   223.29  250.31


                             TOTAL PRODUCTION =   300.95  337.37
                             ***********************************
```

```
1009.   SHOS ANT 2    17 AUGUST      1981      IN SW

                        NUMBER OF PLOTS = 10
                           PLOT SIZE 1X1
LANT     PLANT    AVE.    1X1     TOTAL    AVE.     WGT./    LBS      KGS
ODE      NAME     PER-    ABS.    WGT.     WGT.     UNIT     PER      PER
                  CENT    PLOT    GMS/10   /PLOT    COVER    ACRE     HA.
                  COVER   FREQ.   SQ.FT.   OCCUR-   AREA
                  AREA    BASE             RENCES
                          10
***********************************************************************************
 6   SHRUBS
       ARTR      10.50       5.
 3   PER GRASS
       AGSM        .38       9.     4.74      .47     1.25    45.52     51.03
       BOGR        .20       1.      .19      .02      .10     1.82      2.04
       POSE        .28       2.      .29      .03      .10     2.78      3.12
       STCO        .28       2.     2.06      .21      .74    19.78     22.17

          ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION =  69.90     78.36


     PRECIPITATION DATA                   PRODUCTION ESTIMATES OF SHRUBS
     RAIN GAUGE                           AND WOODY MAT FORM PLANTS
    ************************              **********************************
    OCT 15 TP APR 15 = 2.80                 ARTR               203.54    228.17
    APR 15 TO JULY 1 = 4.88                 OPPO                15.63     17.52
    JULY 1 TO SEPT 1 = 1.00                 PHHO                 4.12      4.62
    SEPT 1 TO OCT 15 = 1.36
    SEASON LONG TOTAL=10.04
    LONG TERM AVERAGE= 8.32

                          TOTAL SHRUB PRODUCTION =  223.29    250.31


                                TOTAL PRODUCTION =  293.19    328.67
                                ************************************
```

```
  1009.   SHOS ANT 2   17 AUGUST   1981     OUT NATIVE

                    NUMBER OF PLOTS = 20
                      PLOT SIZE 1X1
PLANT   PLANT   AVE.   1X1    TOTAL   AVE.   WGT./  LBS    KGS
CODE    NAME    PER-   ABS.   WGT.    WGT.   UNIT   PER    PER
                CENT   PLOT   GMS/20  /PLOT  COVER  ACRE   HA.
                COVER  FREQ.  SQ.FT.  OCCUR- AREA
                AREA   BASE           RENCES
                       20
********************************************************************
   6  SHRUBS
        ARTR     6.84     6.
        OPPO     4.05     7.
   3  PER GRASS
        AGSM      .09     7.   2.21    .11   1.23  10.61    11.89
        BOGR     1.78    10.   7.33    .37    .21  35.19    39.45
        POSE      .63     9.   3.00    .15    .24  14.40    16.14
               TOTAL PERENNIAL GRASS PRODUCTION =  60.20    67.48
   2  PER FORBS
        ALTE      .01     1.
        SPCO      .01     1.
           PERENNIAL FORBS =    .22    .01   1.10   1.05     1.18
   4  ANN FORBS
        PLPA      .01     2.
              ANNUAL FORBS =    .03    .00    .15    .14      .16

         ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION =  61.39    68.82


     PRECIPITATION DATA           PRODUCTION ESTIMATES OF SHRUBS
     RAIN GAUGE                   AND WOODY MAT FORM PLANTS
   **********************         ******************************
    OCT 15 TP APR 15 =  2.80        ARTR          305.13  342.05
    APR 15 TO JULY 1 =  4.88        OPPO           17.26   19.35
    JULY 1 TO SEPT 1 =  1.00        PHHO            7.70    8.63
    SEPT 1 TO OCT 15 =  1.36
    SEASON LONG TOTAL= 10.04
    LONG TERM AVERAGE=  8.32

                        TOTAL SHRUB PRODUCTION =  330.08  370.02


                              TOTAL PRODUCTION =  391.47  438.84
                              *********************************
```

```
 1011.   SHOS ANT 4     17 AUGUST     1981     IN NE

                     NUMBER OF PLOTS = 10
                       PLOT SIZE 1X1
PLANT   PLANT   AVE.   1X1    TOTAL   AVE.   WGT./   LBS   KGS
CODE    NAME    PER-   ABS.   WGT.    WGT.   UNIT    PER   PER
                CENT   PLOT   GMS/10  /PLOT  COVER   ACRE  HA.
                COVER  FREQ.  SQ.FT.  OCCUR- AREA
                AREA   BASE           RENCES
                       10
************************************************************************
  6  SHRUBS
        ARTR     20.00     6.
        OPPO       .50     2.
        PHHO      1.95     4.
  3  PER GRASS
        AGSM       .28     7.    2.72    .27    .97  26.12   29.28
        BOGR       .25     2.     .52    .05    .21   4.99    5.59
        POSE       .83     4.    2.19    .22    .26  21.03   23.57
        STCO       .20     1.    1.79    .18    .90  17.19   19.27
                TOTAL PERENNIAL GRASS PRODUCTION =   69.33   77.72
  2  PER FORBS
        ERPU       .04     1.
        SPCO       .06     3.
           PERENNIAL FORBS =     1.03    .10   1.03   9.89   11.09

          ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION =   79.22   88.81


    PRECIPITATION DATA             PRODUCTION ESTIMATES OF SHRUBS
    RAIN GAUGE                     AND WOODY MAT FORM PLANTS
   ************************        ********************************
   OCT 15 TP APR 15 = 2.52          ARTR             220.98  247.71
   APR 15 TO JULY 1 = 4.98          OPPO              14.00   15.70
   JULY 1 TO SEPT 1 =  .83          PHHO               1.10    1.23
   SEPT 1 TO OCT 15 = 1.33
   SEASON LONG TOTAL= 9.66
   LONG TERM AVERAGE= 8.04

                         TOTAL SHRUB PRODUCTION =  236.08  264.64


                               TOTAL PRODUCTION =  315.30  353.45
                               ***********************************
  1011.   SHOS ANT 4    17 AUGUST    1981     IN NW

                      NUMBER OF PLOTS = 10
                         PLOT SIZE 1X1
PLANT   PLANT   AVE.   1X1     TOTAL   AVE.    WGT./   LBS    KGS
CODE    NAME    PER-   ABS.    WGT.    WGT.    UNIT    PER    PER
                CENT   PLOT    GMS/10  /PLOT   COVER   ACRE   HA.
                COVER  FREQ.   SQ.FT.  OCCUR-  AREA
                AREA   BASE            RENCES
                       10
*****************************************************************************
   6  SHRUBS
        ARTR      6.50      1.
        OPPO      1.25      4.
   3  PER GRASS
        AGSM       .01      1.      .27     .03    2.70    2.59    2.90
        BOGR      1.88      7.     3.76     .38     .20   36.10   40.47
        CAEL      1.00      1.     2.91     .29     .29   27.94   31.32
        POSE       .70      6.      .85     .09     .12    8.16    9.15
        STCO       .60      3.     7.51     .75    1.25   72.12   80.85
                TOTAL PERENNIAL GRASS PRODUCTION = 146.91  164.69
   2  PER FORBS
        SPCO       .05      4.
             PERENNIAL FORBS =      .50     .05    1.00    4.80    5.38
   5  ANN GRASS
        VUOC       .01      1.
              ANNUAL GRASSES =      .01     .00     .10     .09     .10
   4  ANN FORBS
        DEPI       .02      1.
                ANNUAL FORBS =      .10     .01     .50     .96    1.08

          ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 152.76  171.24


     PRECIPITATION DATA               PRODUCTION ESTIMATES OF SHRUBS
     RAIN GAUGE                       AND WOODY MAT FORM PLANTS
     ***********************          *********************************
      OCT 15 TP APR 15 =  2.52          ARTR              220.98  247.71
      APR 15 TO JULY 1 =  4.98          OPPO               14.00   15.70
      JULY 1 TO SEPT 1 =   .83          PHHO                1.10    1.23
      SEPT 1 TO OCT 15 =  1.33
      SEASON LONG TOTAL=  9.66
      LONG TERM AVERAGE=  8.04

                        TOTAL SHRUB PRODUCTION =  236.08  264.64


                             TOTAL PRODUCTION =  388.84  435.89
                             ************************************
```

```
1011.   SHOS ANT 4    17 AUGUST   1981      IN SE

                     NUMBER OF PLOTS = 10
                       PLOT SIZE 1X1
PLANT    PLANT   AVE.  1X1    TOTAL    AVE.    WGT./    LBS    KGS
CODE     NAME    PER-  ABS.   WGT.     WGT.    UNIT     PER    PER
                 CENT  PLOT   GMS/10   /PLOT   COVER    ACRE   HA.
                 COVER FREQ.  SQ.FT.   OCCUR-  AREA
                 AREA  BASE            RENCES
                       10
********************************************************************
  6  SHRUBS
      ARTR      4.50     4.
      OPPO       .18     2.
      PHHO       .90     1.
  3  PER GRASS
      AGSM       .08     3.      .61     .06     .76    5.85    6.56
      BOGR       .83     3.     2.15     .22     .26   20.64   23.14
      POSE      1.16     7.     1.54     .15     .13   14.78   16.57
                 TOTAL PERENNIAL GRASS PRODUCTION =    41.27   46.26
  2  PER FORBS
      ERPU       .40     1.
      SPCO       .04     2.
             PERENNIAL FORBS =  3.60     .36     .82   34.57   38.75

          ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION =     75.84   85.02


  PRECIPITATION DATA                PRODUCTION ESTIMATES OF SHRUBS
  RAIN GAUGE                        AND WOODY MAT FORM PLANTS
*************************           **********************************
 OCT 15 TP APR 15 = 2.52            ARTR              220.98  247.71
 APR 15 TO JULY 1 = 4.98            OPPO               14.00   15.70
 JULY 1 TO SEPT 1 =  .83            PHHO                1.10    1.23
 SEPT 1 TO OCT 15 = 1.33
 SEASON LONG TOTAL= 9.66
 LONG TERM AVERAGE= 8.04

                       TOTAL SHRUB PRODUCTION =  236.08  264.64


                            TOTAL PRODUCTION =  311.92  349.66
                            ***********************************
 1011.   SHOS ANT 4    17 AUGUST    1981        IN SW

                         NUMBER OF PLOTS = 10
                            PLOT SIZE 1X1
PLANT    PLANT    AVE.   1X1    TOTAL    AVE.   WGT./   LBS    KGS
CODE     NAME     PER-   ABS.   WGT.     WGT.   UNIT    PER    PER
                  CENT   PLOT   GMS/10   /PLOT  COVER   ACRE   HA.
                  COVER  FREQ.  SQ.FT.   OCCUR- AREA
                  AREA   BASE            RENCES
                         10
**************************************************************************
   6  SHRUBS
        OPPO      1.60     3.
        PHHO       .70     2.
   3  PER GRASS
        BOGR      5.35     9.  16.17    1.62    .30 155.28  174.07
        POSE       .66     4.   1.82     .18    .28  17.47   19.58
        STCO      1.41     7.  12.02    1.20    .85 115.43  129.40
                  TOTAL PERENNIAL GRASS PRODUCTION = 288.18  323.05
   2  PER FORBS
        PHLO       .01     1.
        SPCO       .04     3.
              PERENNIAL FORBS =    .40     .04    .80   3.84    4.30
   4  ANN FORBS
        DEPI       .01     1.
        PLPA       .01     1.
                 ANNUAL FORBS =    .20     .02   1.00   1.92    2.15

        ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 293.94  329.51


     PRECIPITATION DATA              PRODUCTION ESTIMATES OF SHRUBS
     RAIN GAUGE                      AND WOODY MAT FORM PLANTS
    ************************         ******************************
    OCT 15 TP APR 15 = 2.52            ARTR            220.98  247.71
    APR 15 TO JULY 1 = 4.98            OPPO             14.00   15.70
    JULY 1 TO SEPT 1 =  .83            PHHO              1.10    1.23
    SEPT 1 TO OCT 15 = 1.33
    SEASON LONG TOTAL= 9.66
    LONG TERM AVERAGE= 8.04

                              TOTAL SHRUB PRODUCTION =  236.08  264.64


                                    TOTAL PRODUCTION =  530.02  594.15
                                   ***********************************
```

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1011.   SHOS ANT 4   17 AUGUST   1981    OUT NATIVE

                   NUMBER OF PLOTS = 20
                     PLOT SIZE 1X1
LANT    PLANT   AVE.   1X1    TOTAL   AVE.    WGT./   LBS    KGS
ODE     NAME    PER-   ABS.   WGT.    WGT.    UNIT    PER    PER
                CENT   PLOT   GMS/20  /PLOT   COVER   ACRE   HA.
                COVER  FREQ.  SQ.FT.  OCCUR-  AREA
                AREA   BASE           RENCES
                       20
*************************************************************************
 6  SHRUBS
      ARTR      12.05      5.
      OPPO        .78      4.
 3  PER GRASS
      AGSM        .20      5.   4.43    .22    1.11   21.27    23.84
      BOGR       4.15     16.  14.82    .74     .18   71.16    79.77
      POSE        .70     11.   3.21    .16     .23   15.41    17.27
      STCO        .35      6.   5.39    .27     .77   25.88    29.01
                TOTAL PERENNIAL GRASS PRODUCTION = 133.72  149.90
 2  PER FORBS
      ALTE        .01      2.
      PHLO        .01      1.
      SPCO        .04      2.
            PERENNIAL FORBS =    .97    .05     .88    4.65     5.21
 4  ANN FORBS
      DEPI        .01      2.
      PLPA        .01      1.
               ANNUAL FORBS =    .24    .01     .60    1.15     1.29
         ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 139.52  156.40


  PRECIPITATION DATA            PRODUCTION ESTIMATES OF SHRUBS
  RAIN GAUGE                    AND WOODY MAT FORM PLANTS
***********************         ******************************
 OCT 15 TP APR 15 = 2.52          ARTR             213.59  239.43
 APR 15 TO JULY 1 = 4.98          OPPO              22.25   24.94
 JULY 1 TO SEPT 1 =  .83          PHHO               1.37    1.54
 SEPT 1 TO OCT 15 = 1.33
 SEASON LONG TOTAL= 9.66
 LONG TERM AVERAGE= 8.04

                     TOTAL SHRUB PRODUCTION =  237.22  265.92


                          TOTAL PRODUCTION =  376.74  422.32
                          *******************************
 1013.   SHOS ANT 7    17 AUGUST    1981     IN NE

                       NUMBER OF PLOTS = 10
                        PLOT SIZE 1X1
PLANT    PLANT    AVE.    1X1     TOTAL    AVE.    WGT./    LBS     KGS
CODE     NAME     PER-    ABS.    WGT.     WGT.    UNIT     PER     PER
                  CENT    PLOT    GMS/10   /PLOT   COVER    ACRE    HA.
                  COVER   FREQ.   SQ.FT.   OCCUR-  AREA
                  AREA    BASE             RENCES
                          10
*****************************************************************************
   6  SHRUBS
        ARTR     11.70      4.
        OPPO       .30      2.
   3  PER GRASS
        AGSM       .14      7.    2.02     .20     1.44    19.39    21.74
        BOGR      1.75      4.    2.48     .25      .14    23.81    26.69
        POSE      1.59      7.    2.24     .22      .14    21.51    24.11
        STCO       .04      1.     .15     .02      .38     1.44     1.61

      ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION =             66.15    74.15


   PRECIPITATION DATA                      PRODUCTION ESTIMATES OF SHRUBS
   RAIN GAUGE                              AND WOODY MAT FORM PLANTS
  ************************                 ********************************
   OCT 15 TP APR 15 =  2.56                  ARTR             270.62  303.36
   APR 15 TO JULY 1 =  5.45                  OPPO              13.46   15.09
   JULY 1 TO SEPT 1 =  1.55                  PHHO              11.00   12.33
   SEPT 1 TO OCT 15 =  1.34
   SEASON LONG TOTAL= 10.90
   LONG TERM AVERAGE=  8.44

                           TOTAL SHRUB PRODUCTION =  295.07  330.78


                                 TOTAL PRODUCTION =  361.22  404.93
                                 **********************************
  1013.   SHOS ANT 7    17 AUGUST     1981     IN NW

                     NUMBER OF PLOTS = 10
                       PLOT SIZE 1X1
PLANT   PLANT   AVE.   1X1    TOTAL   AVE.    WGT./   LBS   KGS
CODE    NAME    PER-   ABS.   WGT.    WGT.    UNIT    PER   PER
                CENT   PLOT   GMS/10  /PLOT   COVER   ACRE  HA.
                COVER  FREQ.  SQ.FT.  OCCUR-  AREA
                AREA   BASE           RENCES
                       10
**********************************************************************
   6  SHRUBS
        ARTR      6.70     4.
        OPPO      1.30     2.
        PHHO       .40     1.
   3  PER GRASS
        AGSM       .17     8.    1.74     .17    1.02   16.70   18.72
        BOGR       .60     3.     .94     .09     .16    9.02   10.11
        POSE       .55     4.     .65     .07     .12    6.24    7.00
        SIHY       .10     1.     .89     .09     .89    8.54    9.57
        STCO       .10     1.     .19     .02     .19    1.82    2.04
                TOTAL PERENNIAL GRASS PRODUCTION =  42.32   47.44
   2  PER FORBS
        ALTE       .02     2.
            PERENNIAL FORBS =     .94     .09    4.70    9.02   10.11
   4  ANN FORBS
        LUPU       .02     2.
               ANNUAL FORBS =     .01     .00     .05     .09     .10

          ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION =  51.43   57.65


     PRECIPITATION DATA             PRODUCTION ESTIMATES OF SHRUBS
     RAIN GAUGE                     AND WOODY MAT FORM PLANTS
   **********************           *******************************
    OCT 15 TP APR 15 = 2.56          ARTR          270.62  303.36
    APR 15 TO JULY 1 = 5.45          OPPO           13.46   15.09
    JULY 1 TO SEPT 1 = 1.55          PHHO           11.00   12.33
    SEPT 1 TO OCT 15 = 1.34
    SEASON LONG TOTAL=10.90
    LONG TERM AVERAGE= 8.44

                         TOTAL SHRUB PRODUCTION =  295.07  330.78


                               TOTAL PRODUCTION =  346.50  388.43
                               **********************************
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```
 1013.   SHOS ANT 7   17 AUGUST    1981      IN SE

                    NUMBER OF PLOTS = 10
                       PLOT SIZE 1X1
PLANT    PLANT    AVE.   1X1    TOTAL    AVE.   WGT./   LBS    KGS
CODE     NAME     PER-   ABS.   WGT.     WGT.   UNIT    PER    PER
                  CENT   PLOT   GMS/10   /PLOT  COVER   ACRE   HA.
                  COVER  FREQ.  SQ.FT.   OCCUR- AREA
                  AREA   BASE            RENCES
                         10
*********************************************************************
   6  SHRUBS
        ARTR      6.60     5.
        OPPO       .50     1.
   3  PER GRASS
        AGSM       .13     5.     .72     .07    .55    6.91    7.75
        BOGR      2.00     5.    2.81     .28    .14   26.98   30.24
        POSE      1.34     8.    2.11     .21    .16   20.26   22.71
        STCO      1.20     3.    4.89     .49    .41   46.96   52.64
                  TOTAL PERENNIAL GRASS PRODUCTION = 101.11  113.34
   2  PER FORBS
        SPCO       .01     1.
              PERENNIAL FORBS =   .10     .01   1.00     .96    1.08
   4  ANN FORBS
        LUPU       .06     1.
                 ANNUAL FORBS =  0.00    0.00   0.00    0.00    0.00

            ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 102.07  114.42


   PRECIPITATION DATA                   PRODUCTION ESTIMATES OF SHRUBS
   RAIN GAUGE                           AND WOODY MAT FORM PLANTS
   ***********************              ******************************
    OCT 15 TP APR 15 = 2.56               ARTR          270.62  303.36
    APR 15 TO JULY 1 = 5.45               OPPO           13.46   15.09
    JULY 1 TO SEPT 1 = 1.55               PHHO           11.00   12.33
    SEPT 1 TO OCT 15 = 1.34
    SEASON LONG TOTAL=10.90
    LONG TERM AVERAGE= 8.44

                          TOTAL SHRUB PRODUCTION =  295.07  330.78


                               TOTAL PRODUCTION =  397.14  445.20
                               ***********************************
 1013.   SHOS ANT 7   17 AUGUST   1981       IN SW

                         NUMBER OF PLOTS = 10
                            PLOT SIZE 1X1
PLANT    PLANT    AVE.   1X1     TOTAL    AVE.     WGT./    LBS    KGS
CODE     NAME     PER-   ABS.    WGT.     WGT.     UNIT     PER    PER
                  CENT   PLOT    GMS/10   /PLOT    COVER    ACRE   HA.
                  COVER  FREQ.   SQ.FT.   OCCUR-   AREA
                  AREA   BASE             RENCES
                         10
*************************************************************************
   6   SHRUBS
         ARTR     19.20      9.
         PHHO       .20      1.
         LEPU       .80      2.
   3   PER GRASS
         AGSM       .04      3.     .54     .05     1.35     5.18     5.81
         BOGR       .03      1.     .06     .01      .20      .57      .64
         POSE      1.50      7.    2.66     .27      .18    25.54    28.63
                  TOTAL PERENNIAL GRASS PRODUCTION =       31.29    35.08
   2   PER FORBS
         ALTE       .01      1.
             PERENNIAL FORBS =      .09     .01      .90      .86      .96

           ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION =        32.15    36.04


     PRECIPITATION DATA                 PRODUCTION ESTIMATES OF SHRUBS
     RAIN GAUGE                         AND WOODY MAT FORM PLANTS
    ***********************             ********************************
    OCT 15 TP APR 15 =  2.56              ARTR               270.62  303.36
    APR 15 TO JULY 1 =  5.45              OPPO                13.46   15.09
    JULY 1 TO SEPT 1 =  1.55              PHHO                11.00   12.33
    SEPT 1 TO OCT 15 =  1.34
    SEASON LONG TOTAL= 10.90
    LONG TERM AVERAGE=  8.44

                          TOTAL SHRUB PRODUCTION =       295.07  330.78


                                TOTAL PRODUCTION =       327.22  366.82
                                ***********************************
```

```
  1013.   SHOS ANT 7   17 AUGUST    1981      OUT NATIVE

                       NUMBER OF PLOTS = 20
                         PLOT SIZE 1X1
PLANT    PLANT    AVE.    1X1    TOTAL    AVE.    WGT./    LBS    KGS
CODE     NAME     PER-    ABS.   WGT.     WGT.    UNIT     PER    PER
                  CENT    PLOT   GMS/20   /PLOT   COVER    ACRE   HA.
                  COVER   FREQ.  SQ.FT.   OCCUR-  AREA
                  AREA    BASE            RENCES
                          20
*****************************************************************************
   6  SHRUBS
        ARTR     26.40     15.
        OPPO       .20      2.
        PHHO      2.10      6.
   3  PER GRASS
        AGSM       .13      8.     3.12     .16     1.20   14.98    16.79
        BOGR       .50      2.     1.59     .08      .16    7.63     8.55
        POSE      1.58     14.     5.62     .28      .18   26.98    30.24
        STCO       .03      1.      .36     .02      .60    1.72     1.93

       ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION =   51.31    57.52



    PRECIPITATION DATA                  PRODUCTION ESTIMATES OF SHRUBS
    RAIN GAUGE                          AND WOODY MAT FORM PLANTS
    ************************            **********************************
    OCT 15 TP APR 15 = 2.56               ARTR             233.69   261.97
    APR 15 TO JULY 1 = 5.45               OPPO              12.05    13.51
    JULY 1 TO SEPT 1 = 1.55               PHHO              18.69    20.95
    SEPT 1 TO OCT 15 = 1.34
    SEASON LONG TOTAL= 10.90
    LONG TERM AVERAGE= 8.44

                             TOTAL SHRUB PRODUCTION =   264.43   296.43


                                   TOTAL PRODUCTION =   315.74   353.95
                                   ***********************************
```

```
 1014.   SHOS ANT 8    17 AUGUST    1981      IN NE

                      NUMBER OF PLOTS = 10
                        PLOT SIZE 1X1
PLANT    PLANT    AVE.    1X1     TOTAL    AVE.    WGT./   LBS     KGS
CODE     NAME     PER-    ABS.    WGT.     WGT.    UNIT    PER     PER
                  CENT    PLOT    GMS/10   /PLOT   COVER   ACRE    HA.
                  COVER   FREQ.   SQ.FT.   OCCUR-  AREA
                  AREA    BASE             RENCES
                          10
**************************************************************************
   6  SHRUBS
        ARTR       14.01      4.
   3  PER GRASS
        AGSM         .32      5.    6.62     .66    2.07   63.57    71.26
        BOGR        3.14      5.    5.57     .56     .18   53.49    59.96
        POSE         .82      6.    3.28     .33     .40   31.49    35.30
        STCO         .73      5.    9.10     .91    1.25   87.39    97.96
                  TOTAL PERENNIAL GRASS PRODUCTION = 235.94   264.49
   4  ANN FORBS
        PLPA         .02      2.
                 ANNUAL FORBS =      .11     .01     .55    1.05     1.18

           ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 236.99   265.67


     PRECIPITATION DATA                PRODUCTION ESTIMATES OF SHRUBS
     RAIN GAUGE                        AND WOODY MAT FORM PLANTS
    ************************           ******************************
    OCT 15 TP APR 15 = 2.54             ARTR             114.79   128.68
    APR 15 TO JULY 1 = 5.32             OPPO              11.18    12.53
    JULY 1 TO SEPT 1 = 1.19
    SEPT 1 TO OCT 15 = 1.39
    SEASON LONG TOTAL= 10.44
    LONG TERM AVERAGE= 8.30

                          TOTAL SHRUB PRODUCTION =  125.97   141.21


                                TOTAL PRODUCTION =  362.96   406.87
                                ***********************************
```

```
1014.   SHOS ANT 8   17 AUGUST    1981      IN NW

                    NUMBER OF PLOTS = 10
                       PLOT SIZE 1X1
PLANT   PLANT   AVE.   1X1    TOTAL   AVE.    WGT./   LBS    KGS
CODE    NAME    PER-   ABS.   WGT.    WGT.    UNIT    PER    PER
                CENT   PLOT   GMS/10  /PLOT   COVER   ACRE   HA.
                COVER  FREQ.  SQ.FT.  OCCUR-  AREA
                AREA   BASE           RENCES
                       10
**************************************************************************
  6  SHRUBS
       ARTR    17.70     5.
       PHHO      .10     1.
  3  PER GRASS
       AGSM      .31     7.     3.19     .32    1.03   30.63    34.34
       BOGR      .33     2.     1.11     .11     .34   10.65    11.94
       POSE      .61     7.     1.77     .18     .29   16.99    19.05
       STCO      .44     4.     5.20     .52    1.18   49.93    55.97
                TOTAL PERENNIAL GRASS PRODUCTION = 108.20   121.29
  2  PER FORBS
       SPCO      .01     1.
           PERENNIAL FORBS =     .20     .02    2.00    1.92     2.15

        ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 110.12   123.44


  PRECIPITATION DATA                 PRODUCTION ESTIMATES OF SHRUBS
  RAIN GAUGE                         AND WOODY MAT FORM PLANTS
 ***********************             ********************************
 OCT 15 TP APR 15 = 2.54               ARTR              114.79  128.68
 APR 15 TO JULY 1 = 5.32               OPPO               11.18   12.53
 JULY 1 TO SEPT 1 = 1.19
 SEPT 1 TO OCT 15 = 1.39
 SEASON LONG TOTAL= 10.44
 LONG TERM AVERAGE= 8.30

                       TOTAL SHRUB PRODUCTION =  125.97  141.21


                            TOTAL PRODUCTION =  236.09  264.65
                            **********************************
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1014.   SHOS ANT 8   17 AUGUST    1981     IN SE

                          NUMBER OF PLOTS = 10
                             PLOT SIZE 1X1
PLANT    PLANT    AVE.   1X1    TOTAL    AVE.    WGT./    LBS     KGS
CODE     NAME     PER-   ABS.   WGT.     WGT.    UNIT     PER     PER
                  CENT   PLOT   GMS/10   /PLOT   COVER    ACRE    HA.
                  COVER  FREQ.  SQ.FT.   OCCUR-  AREA
                  AREA   BASE            RENCES
                         10
*****************************************************************************
   6  SHRUBS
        ARTR       4.16      5.
        OPPO       1.20      3.
   3  PER GRASS
        AGSM        .29      8.    4.15     .42    1.43   39.85    44.67
        BOGR       3.18      4.    8.86     .89     .28   85.08    95.37
        POSE       2.33      7.    4.93     .49     .21   47.34    53.07
        STCO       1.47      7.   10.72    1.07     .73  102.94   115.40
                  TOTAL PERENNIAL GRASS PRODUCTION = 275.21   308.51
   4  ANN FORBS
        PLPA        .01      1.
                ANNUAL FORBS =      .59     .06    5.90    5.66     6.34

           ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 280.87   314.86


      PRECIPITATION DATA                 PRODUCTION ESTIMATES OF SHRUBS
      RAIN GAUGE                         AND WOODY MAT FORM PLANTS
     ************************            ********************************
     OCT 15 TP APR 15 = 2.54               ARTR              114.79  128.68
     APR 15 TO JULY 1 = 5.32               OPPO               11.18   12.53
     JULY 1 TO SEPT 1 = 1.19
     SEPT 1 TO OCT 15 = 1.39
     SEASON LONG TOTAL=10.34
     LONG TERM AVERAGE= 8.30

                           TOTAL SHRUB PRODUCTION =  125.97  141.21


                                 TOTAL PRODUCTION =  406.84  456.06
                                 ************************************
```

```
1014.   SHOS ANT 8   17 AUGUST    1981     IN SW

                     NUMBER OF PLOTS = 10
                        PLOT SIZE 1X1
PLANT    PLANT    AVE.  1X1    TOTAL     AVE.    WGT./    LBS     KGS
CODE     NAME     PER-  ABS.   WGT.      WGT.    UNIT     PER     PER
                  CENT  PLOT   GMS/10    /PLOT   COVER    ACRE    HA.
                  COVER FREQ.  SQ.FT.    OCCUR-  AREA
                  AREA  BASE             RENCES
                        10
***************************************************************************
  6  SHRUBS
       ARTR       3.76    5.
       OPPO       1.00    2.
  3  PER GRASS
       AGSM        .09    4.     1.20     .12    1.33    11.52    12.91
       BOGR       1.82    7.     4.62     .46     .25    44.36    49.73
       POSE       1.08    8.     3.46     .35     .32    33.22    37.24
       STCO       1.35    8.    19.66    1.97    1.46   188.80   211.64
                TOTAL PERENNIAL GRASS PRODUCTION =     277.90   311.53
  4  ANN FORBS
       PLPA        .03    3.
               ANNUAL FORBS =     .22     .02     .73     2.11     2.37

          ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION =     280.01   313.89


   PRECIPITATION DATA                PRODUCTION ESTIMATES OF SHRUBS
   RAIN GAUGE                        AND WOODY MAT FORM PLANTS
  ************************           ******************************
   OCT 15 TP APR 15 = 2.54             ARTR              114.79  128.68
   APR 15 TO JULY 1 = 5.32             OPPO               11.18   12.53
   JULY 1 TO SEPT 1 = 1.19
   SEPT 1 TO OCT 15 = 1.39
   SEASON LONG TOTAL=10.44
   LONG TERM AVERAGE= 8.30

                        TOTAL SHRUB PRODUCTION =  125.97  141.21


                             TOTAL PRODUCTION =  405.98  455.10
                             ************************************
  1014.   SHOS ANT 8    17 AUGUST    1981     OUT NATIVE

                     NUMBER OF PLOTS = 20
                       PLOT SIZE 1X1
PLANT   PLANT   AVE.   1X1    TOTAL  AVE.   WGT./   LBS   KGS
CODE    NAME    PER-   ABS.   WGT.   WGT.   UNIT    PER   PER
                CENT   PLOT   GMS/20 /PLOT  COVER   ACRE  HA.
                COVER  FREQ.  SQ.FT. OCCUR- AREA
                AREA   BASE          RENCES
                       20
*********************************************************************
   6  SHRUBS
        ARTR      2.75   4.
        OPPO       .60   5.
   3  PER GRASS
        AGSM       .40  11.    3.88    .19    .49  18.63   20.88
        BOGR      3.90  13.   16.67    .83    .21  80.04   89.72
        POSE       .49   8.    1.35    .07    .14   6.48    7.26
        STCO      1.89  14.   20.33   1.02    .54  97.61  109.42
                TOTAL PERENNIAL GRASS PRODUCTION = 202.76  227.29
   2  PER FORBS
        SPCO       .01   1.
            PERENNIAL FORBS =   .03    .00    .30    .14     .16
   4  ANN FORBS
        PLPA       .02   4.
               ANNUAL FORBS =   .31    .02    .78   1.48    1.66

          ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 204.38  229.11


     PRECIPITATION DATA            PRODUCTION ESTIMATES OF SHRUBS
     RAIN GAUGE                    AND WOODY MAT FORM PLANTS
    **********************         ******************************
    OCT 15 TP APR 15 = 2.54         ARTR           63.69   71.40
    APR 15 TO JULY 1 = 5.32         OPPO           12.81   14.36
    JULY 1 TO SEPT 1 = 1.19         PHHO             .55     .62
    SEPT 1 TO OCT 15 = 1.39
    SEASON LONG TOTAL=10.44
    LONG TERM AVERAGE= 8.30

                         TOTAL SHRUB PRODUCTION =   77.05   86.37


                               TOTAL PRODUCTION =  281.43  315.48
                               *********************************
```

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1015.   SHOS ANT 9    17 AUGUST     1981      IN NE

                         NUMBER OF PLOTS = 10
                           PLOT SIZE 1X1
PLANT    PLANT    AVE.    1X1     TOTAL    AVE.     WGT./    LBS     KGS
CODE     NAME     PER-    ABS.    WGT.     WGT.     UNIT     PER     PER
                  CENT    PLOT    GMS/10   /PLOT    COVER    ACRE    HA.
                  COVER   FREQ.   SQ.FT.   OCCUR-   AREA
                  AREA    BASE             RENCES
                          10
*****************************************************************************
   6  SHRUBS
        ARTR      15.10      6.
   3  PER GRASS
        AGSM        .33      7.    2.85      .29      .86   27.36    30.67
        BOGR       1.47      6.    3.25      .33      .22   31.21    34.99
        CAEL        .08      4.     .18      .02      .23    1.72     1.93
        POSE        .46      5.    1.60      .16      .35   15.36    17.22
        STCO        .09      1.     .56      .06      .62    5.37     6.02

           ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION =   81.02    90.82


      PRECIPITATION DATA                  PRODUCTION ESTIMATES OF SHRUBS
       RAIN GAUGE                         AND WOODY MAT FORM PLANTS
      ************************            ********************************
       OCT 15 TP APR 15 = 2.46              ARTR              262.63  294.41
       APR 15 TO JULY 1 = 5.42              OPPO                6.62    7.42
       JULY 1 TO SEPT 1 = 1.01              PHHO               23.59   26.44
       SEPT 1 TO OCT 15 = 1.32
       SEASON LONG TOTAL= 10.21
       LONG TERM AVERAGE=  8.34

                              TOTAL SHRUB PRODUCTION =  292.84  328.27


                                    TOTAL PRODUCTION =  373.86  419.09
                                    ***********************************
```

```
1015.   SHOS ANT 9   17 AUGUST     1981      IN NW

                         NUMBER OF PLOTS = 10
                           PLOT SIZE 1X1
PLANT    PLANT    AVE.    1X1     TOTAL    AVE.    WGT./    LBS    KGS
CODE     NAME     PER-    ABS.    WGT.     WGT.    UNIT     PER    PER
                  CENT    PLOT    GMS/10   /PLOT   COVER    ACRE   HA.
                  COVER   FREQ.   SQ.FT.   OCCUR-  AREA
                  AREA    BASE             RENCES
                          10
*************************************************************************
  6   SHRUBS
        ARTR      16.50      9.
        OPPO        .20      1.
        PHHO        .30      1.
  3   PER GRASS
        AGSM        .19      5.     1.99     .20    1.05   19.11    21.42
        BOGR        .74      3.     1.28     .13     .17   12.29    13.78
        POSE       1.48      8.     3.31     .33     .22   31.78    35.63
        STCO        .15      1.      .59     .06     .39    5.66     6.34
                  TOTAL PERENNIAL GRASS PRODUCTION =       68.84    77.17
  2   PER FORBS
        ALTE        .02      2.
        SPCO        .01      1.
              PERENNIAL FORBS =      .21     .02     .70    2.01     2.25

          ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION =         70.85    79.42


   PRECIPITATION DATA                 PRODUCTION ESTIMATES OF SHRUBS
   RAIN GAUGE                         AND WOODY MAT FORM PLANTS
   ************************           ********************************
   OCT 15 TP APR 15 = 2.46              ARTR              262.63  294.41
   APR 15 TO JULY 1 = 5.42              OPPO                6.62    7.42
   JULY 1 TO SEPT 1 = 1.01              PHHO               23.59   26.44
   SEPT 1 TO OCT 15 = 1.32
   SEASON LONG  TOTAL=10.21
   LONG TERM AVERAGE= 8.34

                          TOTAL SHRUB PRODUCTION =  292.84  328.27


                                TOTAL PRODUCTION =  363.69  407.69
                                ***********************************
  1015.   SHOS ANT 9     17 AUGUST    1981     IN SE

                          NUMBER OF PLOTS = 10
                          PLOT SIZE 1X1
PLANT    PLANT    AVE.    1X1     TOTAL    AVE.    WGT./    LBS    KGS
CODE     NAME     PER-    ABS.    WGT.     WGT.    UNIT     PER    PER
                  CENT    PLOT    GMS/10   /PLOT   COVER    ACRE   HA.
                  COVER   FREQ.   SQ.FT.   OCCUR-  AREA
                  AREA    BASE             RENCES
                          10
***************************************************************************
   6  SHRUBS
        ARTR     11.10      5.
        OPPO       .40      1.
   3  PER GRASS
        AGSM       .02      1.      .34      .03     1.70     3.26     3.65
        BOGR      2.50      6.     4.43      .44      .18    42.54    47.69
        POSE      1.01      7.     2.41      .24      .24    23.14    25.94
        STCO       .50      1.     5.15      .52     1.03    49.45    55.43
                  TOTAL PERENNIAL GRASS PRODUCTION = 118.39   132.72
   4  ANN FORBS
        LEPE       .02      1.
                 ANNUAL FORBS =    1.57      .16     7.85    15.07    16.89

              ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 133.46   149.61


    PRECIPITATION DATA                   PRODUCTION ESTIMATES OF SHRUBS
    RAIN GAUGE                           AND WOODY MAT FORM PLANTS
   ***********************               ********************************
    OCT 15 TP APR 15 =  2.46              ARTR               262.63   294.41
    APR 15 TO JULY 1 =  5.42              OPPO                 6.62     7.42
    JULY 1 TO SEPT 1 =  1.01              PHHO                23.59    26.44
    SEPT 1 TO OCT 15 =  1.32
    SEASON LONG TOTAL= 10.21
    LONG TERM AVERAGE=  8.34

                             TOTAL SHRUB PRODUCTION =  292.84   328.27


                                   TOTAL PRODUCTION =  426.30   477.88
                                   *************************************
```

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1015.   SHOS ANT 9    17 AUGUST     1981      IN SW

                           NUMBER OF PLOTS = 10
                              PLOT SIZE 1X1
PLANT    PLANT    AVE.    1X1     TOTAL    AVE.     WGT./    LBS     KGS
CODE     NAME     PER-    ABS.    WGT.     WGT.     UNIT     PER     PER
                  CENT    PLOT    GMS/10   /PLOT    COVER    ACRE    HA.
                  COVER   FREQ.   SQ.FT.   OCCUR-   AREA
                  AREA    BASE             RENCES
                          10
*******************************************************************************
   6  SHRUBS
        ARTR      19.80      6.
   3  PER GRASS
        AGSM        .41      7.     5.33      .53     1.30   51.18     57.37
        BOGR       1.50      5.     2.46      .25      .16   23.62     26.48
        POSE        .83      5.     1.48      .15      .18   14.21     15.93
        SIHY        .20      1.     2.70      .27     1.35   25.92     29.06
        STCO        .10      1.      .21      .02      .21    2.01      2.25
                  TOTAL PERENNIAL GRASS PRODUCTION = 116.94  131.09
   2  PER FORBS
        SPCO        .01      1.
           PERENNIAL FORBS =         .10      .01     1.00     .96      1.08

           ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 117.90  132.17


     PRECIPITATION DATA                  PRODUCTION ESTIMATES OF SHRUBS
     RAIN GAUGE                          AND WOODY MAT FORM PLANTS
    ************************             *******************************
    OCT 15 TP APR 15 =  2.46               ARTR              262.63  294.41
    APR 15 TO JULY 1 =  5.42               OPPO                6.62    7.42
    JULY 1 TO SEPT 1 =  1.01               PHHO               23.59   26.44
    SEPT 1 TO OCT 15 =  1.32
    SEASON LONG TOTAL= 10.21
    LONG TERM AVERAGE=  8.34

                            TOTAL SHRUB PRODUCTION =  292.84  328.27


                                  TOTAL PRODUCTION =  410.74  460.43
                                  ***********************************
```

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1015.   SHOS ANT 9    17 AUGUST     1981      OUT NATIVE

                     NUMBER OF PLOTS = 20
                        PLOT SIZE 1X1
PLANT    PLANT    AVE.    1X1     TOTAL     AVE.    WGT./    LBS     KGS
CODE     NAME     PER-    ABS.    WGT.      WGT.    UNIT     PER     PER
                  CENT    PLOT    GMS/20    /PLOT   COVER    ACRE    HA.
                  COVER   FREQ.   SQ.FT.    OCCUR-  AREA
                  AREA    BASE              RENCES
                          20
*******************************************************************************
   6   SHRUBS
         ARTR     11.87    16.
         OPPO       .35     3.
         PHHO      1.10     8.
   3   PER GRASS
         AGSM       .25    10.    4.58      .23      .93    21.99    24.65
         BOGR       .68     3.    1.88      .09      .14     9.02    10.11
         POSE       .80    13.    4.90      .25      .31    23.52    26.37
         SIHY       .04     1.     .37      .02      .46     1.77     1.98
         STCO       .28     2.    3.19      .16      .58    15.31    17.16
                  TOTAL PERENNIAL GRASS PRODUCTION =         71.61    80.27
   2   PER FORBS
         SPCO       .01     1.
              PERENNIAL FORBS =    .19      .01     1.90      .91     1.02

            ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION =         72.52    81.29



     PRECIPITATION DATA                PRODUCTION ESTIMATES OF SHRUBS
     RAIN GAUGE                        AND WOODY MAT FORM PLANTS
    ************************           ********************************
    OCT 15 TP APR 15 = 2.46              ARTR          183.68   205.91
    APR 15 TO JULY 1 = 5.42              OPPO           17.04    19.10
    JULY 1 TO SEPT 1 = 1.01              PHHO           41.89    46.96
    SEPT 1 TO OCT 15 = 1.32
    SEASON LONG TOTAL= 10.21
    LONG TERM AVERAGE= 8.34

                        TOTAL SHRUB PRODUCTION =      242.62   271.97


                             TOTAL PRODUCTION =      315.14   353.27
                             ************************************
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```
1017.   SHOS ANT11    18 AUGUST    1981       IN NE

                         NUMBER OF PLOTS = 10
                           PLOT SIZE 1X1
PLANT    PLANT    AVE.    1X1     TOTAL    AVE.    WGT./    LBS    KGS
CODE     NAME     PER-    ABS.    WGT.     WGT.    UNIT     PER    PER
                  CENT    PLOT    GMS/10   /PLOT   COVER    ACRE   HA.
                  COVER   FREQ.   SQ.FT.   OCCUR-  AREA
                  AREA    BASE             RENCES
                          10
***************************************************************************
  6  SHRUBS
       ARTR       9.35      6.
       OPPO        .75      2.
       PHHO        .05      1.
  3  PER GRASS
       AGSM        .17      5.     2.87      .29     1.69   27.56    30.89
       BOGR       1.45      3.     2.44      .24      .17   23.43    26.27
       POSE        .23      2.      .76      .08      .33    7.29     8.17
       STCO        .70      2.     1.65      .17      .24   15.84    17.76
                 TOTAL PERENNIAL GRASS PRODUCTION =          74.12    83.09
  2  PER FORBS
       SPCO        .01      1.
            PERENNIAL FORBS =       .05      .01      .50      .48      .54
  4  ANN FORBS
       DEPI        .01      1.
                ANNUAL FORBS =      .04      .00      .40      .38      .43

           ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION =          74.98    84.05


     PRECIPITATION DATA                  PRODUCTION ESTIMATES OF SHRUBS
     RAIN GAUGE                          AND WOODY MAT FORM PLANTS
    ************************             *********************************
     OCT 15 TP APR 15 = 2.44               ARTR              121.23  135.90
     APR 15 TO JULY 1 = 5.08               OPPO               73.48   82.37
     JULY 1 TO SEPT 1 =  .74               PHHO                6.49    7.27
     SEPT 1 TO OCT 15 = 1.24
     SEASON LONG TOTAL= 9.50
     LONG TERM AVERAGE= 8.20

                          TOTAL SHRUB PRODUCTION =  201.20  225.54


                                TOTAL PRODUCTION =  276.18  309.60
                                ************************************
```

```
1017.   SHOS ANT11    18 AUGUST    1981        IN NW

                      NUMBER OF PLOTS = 10
                         PLOT SIZE 1X1
PLANT    PLANT    AVE.    1X1    TOTAL    AVE.    WGT./    LBS    KGS
CODE     NAME     PER-    ABS.   WGT.     WGT.    UNIT     PER    PER
                  CENT    PLOT   GMS/10   /PLOT   COVER    ACRE   HA.
                  COVER   FREQ.  SQ.FT.   OCCUR-  AREA
                  AREA    BASE            RENCES
                          10
***********************************************************************
   6  SHRUBS
        ARTR       3.50      3.
        OPPO        .65      2.
   3  PER GRASS
        AGSM        .52      7.    2.16     .22      .42   20.74   23.25
        BOGR       1.00      3.    1.85     .19      .19   17.76   19.91
        POSE        .30      2.     .30     .03      .10    2.88    3.23
        STCO        .10      2.     .34     .03      .34    3.26    3.65
                  TOTAL PERENNIAL GRASS PRODUCTION =       44.64   50.04
   2  PER FORBS
        ALTE        .02      2.
        SPCO        .02      2.
              PERENNIAL FORBS =     .19     .02      .48    1.82    2.04

            ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION =       46.46   52.08


    PRECIPITATION DATA                  PRODUCTION ESTIMATES OF SHRUBS
    RAIN GAUGE                          AND WOODY MAT FORM PLANTS
   ************************             ******************************
   OCT 15 TP APR 15 = 2.44              ARTR              121.23  135.90
   APR 15 TO JULY 1 = 5.08              OPPO               73.48   82.37
   JULY 1 TO SEPT 1 =  .74              PHHO                6.49    7.27
   SEPT 1 TO OCT 15 = 1.24
   SEASON LONG TOTAL= 9.50
   LONG TERM AVERAGE= 8.20

                            TOTAL SHRUB PRODUCTION =  201.20  225.54


                                 TOTAL PRODUCTION =  247.66  277.63
                                 ***********************************
```

```
 1017.   SHOS ANT11   18 AUGUST    1981     IN SE

                     NUMBER OF PLOTS = 10
                     PLOT SIZE 1X1
PLANT    PLANT   AVE.   1X1    TOTAL   AVE.    WGT./   LBS    KGS
CODE     NAME    PER-   ABS.   WGT.    WGT.    UNIT    PER    PER
                 CENT   PLOT   GMS/10  /PLOT   COVER   ACRE   HA.
                 COVER  FREQ.  SQ.FT.  OCCUR-  AREA
                 AREA   BASE           RENCES
                        10
*****************************************************************
   6  SHRUBS
        ARTR       4.00    3.
        OPPO        .90    3.
   3  PER GRASS
        AGSM        .04    1.     .71     .07    1.78    6.81    7.63
        BOGR       2.15    7.    4.73     .47     .22   45.42   50.92
        ORHY        .10    1.     .28     .03     .28    2.68    3.00
        POSE        .74    7.    2.01     .20     .27   19.30   21.64
        SIHY        .10    1.     .25     .03     .25    2.40    2.69
        STCO        .32    4.    1.52     .15     .48   14.59   16.36
               TOTAL PERENNIAL GRASS PRODUCTION =     91.20  102.24
   2  PER FORBS
        ALTE        .02    2.
           PERENNIAL FORBS =          .21     .02    1.05    2.01    2.25

       ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION =     93.21  104.49


    PRECIPITATION DATA            PRODUCTION ESTIMATES OF SHRUBS
    RAIN GAUGE                    AND WOODY MAT FORM PLANTS
   **********************         ******************************
    OCT 15 TP APR 15 =  2.44        ARTR           121.23  135.90
    APR 15 TO JULY 1 =  5.08        OPPO            73.48   82.37
    JULY 1 TO SEPT 1 =   .74        PHHO             6.49    7.27
    SEPT 1 TO OCT 15 =  1.24
    SEASON LONG TOTAL=  9.50
    LONG TERM AVERAGE=  8.20

                     TOTAL SHRUB PRODUCTION =  201.20  225.54


                          TOTAL PRODUCTION =  294.41  330.03
                          ********************************
```

```
1017.   SHOS ANT11   18 AUGUST     1981        IN SW

                         NUMBER OF PLOTS = 10
                            PLOT SIZE 1X1
PLANT     PLANT    AVE.     1X1     TOTAL    AVE.     WGT./    LBS     KGS
CODE      NAME     PER-     ABS.    WGT.     WGT.     UNIT     PER     PER
                   CENT     PLOT    GMS/10   /PLOT    COVER    ACRE    HA.
                   COVER    FREQ.   SQ.FT.   OCCUR-   AREA
                   AREA     BASE             RENCES
                            10
****************************************************************************
   6   SHRUBS
         ARTR      13.05       6.
         OPPO        .20       2.
   3   PER GRASS
         AGSM        .17       6.     1.57      .16      .92    15.07    16.89
         BOGR       1.69       5.     3.50      .35      .21    33.61    37.68
         POSE        .74       7.     1.73      .17      .23    16.61    18.62
         SIHY        .15       2.     1.07      .11      .71    10.27    11.51
         STCO        .52       5.     2.29      .23      .44    21.99    24.65
                   TOTAL PERENNIAL GRASS PRODUCTION =           97.55   109.35
   2   PER FORBS
         ALTE        .03       3.
               PERENNIAL FORBS =           .33      .03     1.10     3.16     3.54

             ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 100.71   112.90


     PRECIPITATION DATA                     PRODUCTION ESTIMATES OF SHRUBS
     RAIN GAUGE                             AND WOODY MAT FORM PLANTS
    ************************               *******************************
    OCT 15 TP APR 15 = 2.44                 ARTR                121.23   135.90
    APR 15 TO JULY 1 = 5.08                 OPPO                 73.48    82.37
    JULY 1 TO SEPT 1 =  .74                 PHHO                  6.49     7.27
    SEPT 1 TO OCT 15 = 1.24
    SEASON LONG TOTAL= 9.50
    LONG TERM AVERAGE= 8.20

                             TOTAL SHRUB PRODUCTION =  201.20   225.54


                                   TOTAL PRODUCTION =  301.91   338.44
                                   **************************************
```

```
1017.   SHOS ANT11    18 AUGUST    1981     OUT NATIVE

                        NUMBER OF PLOTS = 20
                          PLOT SIZE 1X1
PLANT    PLANT    AVE.    1X1     TOTAL    AVE.     WGT./    LBS     KGS
CODE     NAME     PER-    ABS.    WGT.     WGT.     UNIT     PER     PER
                  CENT    PLOT    GMS/20   /PLOT    COVER    ACRE    HA.
                  COVER   FREQ.   SQ.FT.   OCCUR-   AREA
                  AREA    BASE             RENCES
                          20
*************************************************************************
  6   SHRUBS
        ARTR     23.90      14.
        OPPO       .15       3.
  3   PER GRASS
        AGSM       .23      13.    7.77     .39     1.73    37.30    41.81
        BOGR      1.56      11.    7.42     .37      .24    35.62    39.93
        POSE      1.19      17.    3.94     .20      .17    18.91    21.20
        SIHY       .01       1.     .31     .02     1.55     1.48     1.66
        STCO       .10       4.    1.37     .07      .69     6.57     7.36
                  TOTAL PERENNIAL GRASS PRODUCTION =        99.88   111.97
  2   PER FORBS
        ERPU       .02       1.
        SPCO       .01       1.
              PERENNIAL FORBS =    4.38     .22     8.76    21.03    23.57
  5   ANN GRASS
        VUOC       .01       2.
               ANNUAL GRASSES =     .04     .00      .20      .19      .21

           ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION =        121.10   135.75


    PRECIPITATION DATA                  PRODUCTION ESTIMATES OF SHRUBS
    RAIN GAUGE                          AND WOODY MAT FORM PLANTS
    ***********************             *******************************
     OCT 15 TP APR 15 =  2.44             ARTR              96.62  108.32
     APR 15 TO JULY 1 =  5.08             OPPO              15.74   17.64
     JULY 1 TO SEPT 1 =   .74
     SEPT 1 TO OCT 15 =  1.24
     SEASON LONG TOTAL=  9.50
     LONG TERM AVERAGE=  8.20

                          TOTAL SHRUB PRODUCTION =  112.36  125.96


                                TOTAL PRODUCTION =  233.46  261.71
                                ***********************************
  2009.    SMILO        21 JULY        1981        IN NATIVE

                           NUMBER OF PLOTS = 20
                           PLOT SIZE 1X1
 PLANT    PLANT    AVE.    1X1     TOTAL     AVE.     WGT./    LBS     KGS
 CODE     NAME     PER-    ABS.    WGT.      WGT.     UNIT     PER     PER
                   CENT    PLOT    GMS/20    /PLOT    COVER    ACRE    HA.
                   COVER   FREQ.   SQ.FT.    OCCUR-   AREA
                   AREA    BASE              RENCES
                           20
*************************************************************************
    6   SHRUBS
          ARTR     21.55     13.
          OPPO       .10      1.
    3   PER GRASS
          AGSM       .28     15.     7.03      .35     1.28   33.75    37.83
          BOGR       .07      2.      .41      .02      .32    1.96     2.20
          POSE       .60     16.     4.64      .23      .39   22.27    24.96
          SIHY       .07      3.     5.21      .26     4.01   25.01    28.04
          STCO       .35      4.     8.93      .45     1.28   42.87    48.06
                   TOTAL PERENNIAL GRASS PRODUCTION = 125.86  141.09
    5   ANN GRASS
          VUOC       .01      2.
                ANNUAL GRASSES =      .20      .01     1.00     .96     1.08

              ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 126.82  142.17


     PRECIPITATION DATA                    PRODUCTION ESTIMATES OF SHRUBS
     RAIN GAUGE                            AND WOODY MAT FORM PLANTS
    ***********************                *******************************
     OCT 15 TP APR 15 = 3.82                 ARTR              164.74  184.68
     APR 15 TO JULY 1 = 4.81                 OPPO               17.22   19.30
     JULY 1 TO SEPT 1 = 2.93
     SEPT 1 TO OCT 15 = 1.03
     SEASON LONG TOTAL= 12.59
     LONG TERM AVERAGE= 9.24

                              TOTAL SHRUB PRODUCTION =  181.96  203.97


                                    TOTAL PRODUCTION =  308.78  346.14
                                    ***********************************
 2009.    SMILO          21 JULY        1981      OUT NATIV

                      NUMBER OF PLOTS = 20
                        PLOT SIZE 1X1
PLANT    PLANT    AVE.   1X1    TOTAL    AVE.    WGT./    LBS    KGS
CODE     NAME     PER-   ABS.   WGT.     WGT.    UNIT     PER    PER
                  CENT   PLOT   GMS/20   /PLOT   COVER    ACRE   HA.
                  COVER  FREQ.  SQ.FT.   OCCUR-  AREA
                  AREA   BASE            RENCES
                         20
*************************************************************************
   6   SHRUBS
         ARTR      11.00      5.
         OPPO       2.05      5.
   3   PER GRASS
         AGSM        .45     13.   13.25     .66    1.49   63.62    71.32
         POSE        .80     18.    7.49     .37     .47   35.96    40.31
         SIHY        .09      4.    4.26     .21    2.37   20.45    22.92
         STCO        .38      9.   20.92    1.05    2.75  100.45   112.60
                  TOTAL PERENNIAL GRASS PRODUCTION = 220.48   247.16
   5   ANN GRASS
         BRTE        .03      2.
         VUOC        .07      8.
               ANNUAL GRASSES =    1.31     .07     .69    6.29     7.05
   4   ANN FORBS
         PLPA        .06      4.
                ANNUAL FORBS =      .26     .01     .22    1.24     1.39

           ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 228.01   255.60


      PRECIPITATION DATA                  PRODUCTION ESTIMATES OF SHRUBS
      RAIN GAUGE                          AND WOODY MAT FORM PLANTS
    ***********************               ******************************
     OCT 15 TP APR 15 = 3.82                ARTR          165.99   186.07
     APR 15 TO JULY 1 = 4.81                OPPO           22.21    24.89
     JULY 1 TO SEPT 1 = 2.93                PHHO            1.06     1.18
     SEPT 1 TO OCT 15 = 1.03
     SEASON LONG TOTAL=12.59
     LONG TERM AVERAGE= 9.24

                          TOTAL SHRUB PRODUCTION =  189.25   212.15


                                TOTAL PRODUCTION =  417.26   467.75
                                ***********************************
 2009.    SMILO         21 JULY      1981       IN SPRAY

                     NUMBER OF PLOTS = 20
                        PLOT SIZE 1X1
PLANT    PLANT    AVE.   1X1     TOTAL    AVE.    WGT./   LBS    KGS
CODE     NAME     PER-   ABS.    WGT.     WGT.    UNIT    PER    PER
                  CENT   PLOT    GMS/20   /PLOT   COVER   ACRE   HA.
                  COVER  FREQ.   SQ.FT.   OCCUR-  AREA
                  AREA   BASE             RENCES
                         20
***********************************************************************
   6  SHRUBS
        OPPO        .75      2.
   3  PER GRASS
        AGSM        .21     15.   13.50     .67    3.29   64.82   72.66
        BOGR        .13      3.    2.58     .13    1.03   12.38   13.88
        POSE        .12      9.    3.26     .16    1.42   15.65   17.54
        STCO        .67      9.   57.85    2.89    4.35  277.77  311.38
                  TOTAL PERENNIAL GRASS PRODUCTION =     370.62  415.47
   5  ANN GRASS
        BRTE        .24     20.
        VUOC        .04      5.
                ANNUAL GRASSES =  29.89    1.49    5.43  143.52  160.89
   4  ANN FORBS
        PLPA        .02      2.
                  ANNUAL FORBS =    .13     .01     .43     .62     .70

             ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 514.76  577.05


   PRECIPITATION DATA               PRODUCTION ESTIMATES OF SHRUBS
   RAIN GAUGE                       AND WOODY MAT FORM PLANTS
   ***********************          *******************************
   OCT 15 TP APR 15 = 3.82            ARTR               66.02   74.01
   APR 15 TO JULY 1 = 4.81            MAGR                 .03     .03
   JULY 1 TO SEPT 1 = 2.93            OPPO               15.20   17.04
   SEPT 1 TO OCT 15 = 1.03
   SEASON LONG TOTAL= 12.59
   LONG TERM AVERAGE=  9.24

                          TOTAL SHRUB PRODUCTION =   81.26   91.09


                               TOTAL PRODUCTION =  596.02  668.14
                               ***********************************
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2009.    SMILO     21 JULY     1981     OUT SPRAY

                      NUMBER OF PLOTS = 20
                         PLOT SIZE 1X1
PLANT    PLANT    AVE.    1X1    TOTAL    AVE.    WGT./    LBS    KGS
CODE     NAME     PER-    ABS.   WGT.     WGT.    UNIT     PER    PER
                  CENT    PLOT   GMS/20   /PLOT   COVER    ACRE   HA.
                  COVER   FREQ.  SQ.FT.   OCCUR-  AREA
                  AREA    BASE            RENCES
                          20
**************************************************************************
   6  SHRUBS
        ARTR       1.15      1.
        OPPO        .53      2.
   3  PER GRASS
        AGSM        .53     16.   32.49    1.62    3.09 156.00   174.88
        POSE        .14     11.    4.56     .23    1.63  21.89    24.54
        SIHY        .05      1.    1.97     .10    2.19   9.45    10.59
        STCO        .04      1.    2.01     .10    2.51   9.65    10.82
                  TOTAL PERENNIAL GRASS PRODUCTION = 196.99   220.83
   5  ANN GRASS
        BRTE        .19     20.
        VUOC        .08     13.
              ANNUAL GRASSES =    28.63    1.43    5.40 137.47   154.10
   4  ANN FORBS
        PLPA        .04      5.
                ANNUAL FORBS =     1.39     .07    1.99   6.67     7.48

          ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 341.13   382.41


  PRECIPITATION DATA                 PRODUCTION ESTIMATES OF SHRUBS
  RAIN GAUGE                         AND WOODY MAT FORM PLANTS
  ***********************            ********************************
   OCT 15 TP APR 15 = 3.82             ARTR              19.13    21.44
   APR 15 TO JULY 1 = 4.81             OPPO              19.51    21.87
   JULY 1 TO SEPT 1 = 2.93
   SEPT 1 TO OCT 15 = 1.03
   SEASON LONG TOTAL= 12.59
   LONG TERM AVERAGE= 9.24

                           TOTAL SHRUB PRODUCTION =      38.64    43.31


                                 TOTAL PRODUCTION =  379.77   425.72
                                 ************************************
```

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1005.    SWEETWATR   15 JULY      1981         IN ARNO

                    NUMBER OF PLOTS = 20
                      PLOT SIZE 1X1
PLANT    PLANT    AVE.    1X1     TOTAL    AVE.    WGT./    LBS    KGS
CODE     NAME     PER-    ABS.    WGT.     WGT.    UNIT     PER    PER
                  CENT    PLOT    GMS/20   /PLOT   COVER    ACRE   HA.
                  COVER   FREQ.   SQ.FT.   OCCUR-  AREA
                  AREA    BASE             RENCES
                          20
**************************************************************************
   6  SHRUBS
        ARNO      16.35     10.
        EROV        .02      1.
        OPPO        .06      1.
        PHHO        .63      8.
        TECA        .20      3.
   3  PER GRASS
        AGSM        .15     12.    3.11     .16    1.07   14.93   16.74
        AGSP        .10      5.    2.99     .15    1.50   14.35   16.09
        CAFI        .56     16.   11.00     .55     .98   52.81   59.20
        KOCR        .17      9.    4.20     .21    1.24   20.16   22.60
        POSE        .01      1.     .22     .01    1.10    1.05    1.18
        STCO        .20      9.    6.41     .32    1.60   30.77   34.49
                  TOTAL PERENNIAL GRASS PRODUCTION = 134.07  150.29
   2  PER FORBS
        COPA        .61     14.
              PERENNIAL FORBS =   19.13     .96    1.58   91.85  102.96
   4  ANN FORBS
        LIRU        .08      1.
                 ANNUAL FORBS =    0.00    0.00    0.00    0.00    0.00

           ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 225.92  253.26


      PRECIPITATION DATA              PRODUCTION ESTIMATES OF SHRUBS
      RAIN GAUGE                      AND WOODY MAT FORM PLANTS
     **********************           ********************************
     OCT 15 TP APR 15 = 2.74            ARHU               .76     .86
     APR 15 TO JULY 1 = 2.85            ARNO             65.94   73.92
     JULY 1 TO SEPT 1 = 1.39            ARFR              2.92    3.27
     SEPT 1 TO OCT 15 = 1.08            ARTR             16.75   18.77
     SEASON LONG TOTAL= 8.06            ASSP              3.87    4.34
     LONG TERM AVERAGE= 8.84            CELA              9.94   11.14
                                        CHNA              2.69    3.01
                                        CHVI              8.23    9.23
                                        EROV               .70     .79
                                        LEPU              1.62    1.82
                                        OPPO              2.11    2.37
                                        PHHO              1.92    2.15
                                        TECA             13.10   14.69

                           TOTAL SHRUB PRODUCTION =  130.55  146.35


                                TOTAL PRODUCTION =  356.47  399.60
                                ***********************************
```

```
 1005.   SWEETWATR     15 JULY     1981     OUT ARNO

                    NUMBER OF PLOTS = 20
                       PLOT SIZE 1X1
PLANT   PLANT   AVE.   1X1    TOTAL    AVE.    WGT./   LBS    KGS
CODE    NAME    PER-   ABS.   WGT.     WGT.    UNIT    PER    PER
                CENT   PLOT   GMS/20   /PLOT   COVER   ACRE   HA.
                COVER  FREQ.  SQ.FT.   OCCUR-  AREA
                AREA   BASE            RENCES
                       20
*****************************************************************************
  6  SHRUBS
       ARNO      24.06    11.
       ARFR       1.15     1.
       EROV        .07     2.
       LEPU        .10     1.
       TECA        .28     1.
  3  PER GRASS
       AGSM        .04     5.     1.84     .09    2.30    8.83     9.90
       AGSP        .07     4.     1.59     .08    1.22    7.63     8.55
       ORHY        .02     1.      .76     .04    1.90    3.64     4.08
       POSE        .01     1.      .16     .01     .80     .76      .85
       KOCR        .14     7.     2.57     .13     .95   12.34    13.83
       STCO        .34    11.    15.71     .79    2.34   75.43    84.56
                TOTAL PERENNIAL GRASS PRODUCTION =    108.63   121.77
  2  PER FORBS
       ASPU        .30     1.
       LELU        .01     1.
       PEFR        .05     5.
            PERENNIAL FORBS =     7.22     .36    1.00   34.66    38.85

          ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION =    143.29   160.63


  PRECIPITATION DATA               PRODUCTION ESTIMATES OF SHRUBS
  RAIN GAUGE                       AND WOODY MAT FORM PLANTS
 ***********************           *******************************
 OCT 15 TP APR 15 = 2.74             ARHO                 .22      .24
 APR 15 TO JULY 1 = 2.85             ARNO               92.76   103.98
 JULY 1 TO SEPT 1 = 1.39             ASSP                2.64     2.96
 SEPT 1 TO OCT 15 = 1.08             CELA                2.76     3.10
 SEASON LONG TOTAL= 8.06             CHNA               14.58    16.34
 LONG TERM AVERAGE= 8.84             CHVI                7.56     8.48
                                     EROV                1.36     1.53
                                     LEPU                1.54     1.72
                                     OPPO                3.47     3.89
                                     TECA                 .98     1.10

                        TOTAL SHRUB PRODUCTION =  127.87   143.34


                             TOTAL PRODUCTION =  271.16   303.97
                             **********************************
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```
   1005.    SWEETWATR    15 JULY        1981      IN ARTR

                      NUMBER OF PLOTS = 20
                        PLOT SIZE 1X1
 PLANT   PLANT   AVE.   1X1     TOTAL   AVE.   WGT./   LBS   KGS
 CODE    NAME    PER-   ABS.    WGT.    WGT.   UNIT    PER   PER
                 CENT   PLOT    GMS/20  /PLOT  COVER   ACRE  HA.
                 COVER  FREQ.   SQ.FT.  OCCUR- AREA
                 AREA   BASE            RENCES
                        20
***********************************************************************
    6  SHRUBS
         ARNO      2.00    1.
         ARTR      8.00    5.
         CHVI      5.15    8.
         LEPU       .85    4.
         PHHO      1.90    5.
         TECA       .13    1.
    3  PER GRASS
         AGSM       .09    9.    3.30    .17   1.83   15.84   17.76
         AGSP       .03    2.    1.77    .09   2.95    8.49    9.52
         CAEL       .15    7.    2.77    .14    .96   13.30   14.91
         KOCR       .15    9.    3.47    .17   1.16   16.66   18.68
         POSE       .02    2.    1.00    .05   3.33    4.80    5.38
         STCO      1.14   16.   31.39   1.57   1.38  150.72  168.96
                 TOTAL PERENNIAL GRASS PRODUCTION =  209.81  235.20
    2  PER FORBS
         ASMI       .01    2.
         MAGR       .02    1.
         PEFR       .02    2.
         PSTE       .14    6.
             PERENNIAL FORBS =  14.30    .72   3.97   68.66   76.97

           ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION =  278.47  312.16


      PRECIPITATION DATA             PRODUCTION ESTIMATES OF SHRUBS
      RAIN GAUGE                     AND WOODY MAT FORM PLANTS
    ***********************          ********************************
     OCT 15 TP APR 15 = 2.74          ARHO              .11     .12
     APR 15 TO JULY 1 = 2.85          ARNO              .29     .33
     JULY 1 TO SEPT 1 = 1.39          ARTR            63.74   71.46
     SEPT 1 TO OCT 15 = 1.08          CELA             6.21    6.96
     SEASON LONG TOTAL= 8.06          CHNA             1.12    1.26
     LONG TERM AVERAGE= 8.84          CHVI            14.03   15.73
                                      EROV             5.66    6.34
                                      LEPU             6.76    7.58
                                      PHHO             8.05    9.03
                                      TECA              .46     .52

                          TOTAL SHRUB PRODUCTION =   106.45  119.33


                                TOTAL PRODUCTION =   384.92  431.49
                                ***********************************
 1005.   SWEETWATR   15 JULY      1981      OUT ARTR

                     NUMBER OF PLOTS = 20
                        PLOT SIZE 1X1
PLANT   PLANT   AVE.    1X1    TOTAL    AVE.    WGT./   LBS    KGS
CODE    NAME    PER-    ABS.   WGT.     WGT.    UNIT    PER    PER
                CENT    PLOT   GMS/20   /PLOT   COVER   ACRE   HA.
                COVER   FREQ.  SQ.FT.   OCCUR-  AREA
                AREA    BASE            RENCES
                        20
**********************************************************************
  6   SHRUBS
        ARTR    19.65    10.
        CHVI     5.38    10.
        PHHO      .28     3.
  3   PER GRASS
        AGSM      .35    18.   13.65     .68    1.98   65.54   73.47
        CAFI      .56    12.    7.83     .39     .71   37.59   42.14
        KOCR      .12     6.    4.82     .24    2.01   23.14   25.94
        POSE      .07     6.    1.10     .06     .79    5.28    5.92
        STCO      .22     8.    6.75     .34    1.57   32.41   36.33
              TOTAL PERENNIAL GRASS PRODUCTION = 163.96  183.80
  2   PER FORBS
        ASMI      .02     1.
            PERENNIAL FORBS =    .21     .01     .70    1.00    1.12

        ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 164.96  184.92


   PRECIPITATION DATA                PRODUCTION ESTIMATES OF SHRUBS
   RAIN GAUGE                        AND WOODY MAT FORM PLANTS
  ************************           *******************************
   OCT 15 TP APR 15 = 2.74           ARNO               .59     .66
   APR 15 TO JULY 1 = 2,85           ARTR            113.44  127.17
   JULY 1 TO SEPT 1 = 1.39           EROV              1.30    1.45
   SEPT 1 TO OCT 15 = 1.08           CHVI             69.41   77.81
   SEASON LONG TOTAL= 8.06           PHHO              3.72    4.17
   LONG TERM AVERAGE= 8.84

                        TOTAL SHRUB PRODUCTION =  188.45  211.26


                             TOTAL PRODUCTION =  353.41  396.18
                             ***********************************
```

```
2010.   TWO MILE H     8 JULY      1981       IN NATIVE

                       NUMBER OF PLOTS = 20
                          PLOT SIZE 1X10
PLANT    PLANT    AVE.    1X1      TOTAL    AVE.     WGT./    LBS     KGS
CODE     NAME     PER-    ABS.     WGT.     WGT.     UNIT     PER     PER
                  CENT    PLOT     GMS/20   /PLOT    COVER    ACRE    HA.
                  COVER   FREQ.    SQ.FT.   OCCUR-   AREA
                  AREA    BASE              RENCES
                          20
******************************************************************************
   6   SHRUBS
         ATGA        3.80      19.   33.99     1.70      .45 163.20   182.95
   3   PER GRASS
         POSE        1.70      20.   18.60      .93      .55  89.31   100.12
         SIHY        1.28      20.   63.68     3.18     2.50 305.77   342.77
         STCO         .00       1.     .18      .01     9.00    .86      .96
                  TOTAL PERENNIAL GRASS PRODUCTION = 395.94   443.85
   2   PER FORBS
         ALTE         .00       4.
         CRAC         .00       2.
         LOOR         .00       2.
              PERENNIAL FORBS =        .27      .01     1.69    1.29     1.45
   5   ANN GRASS
         BRJA         .00       6.
               ANNUAL GRASSES =       1.20      .06    15.00    5.76     6.46
   4   ANN FORBS
         LARE         .00       1.
         LEPE         .00       3.
                  ANNUAL FORBS =       .46      .02     6.57    2.20     2.47

          ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 568.39   637.17


      PRECIPITATION DATA              PRODUCTION ESTIMATES OF SHRUBS
      RAIN GAUGE                      AND WOODY MAT FORM PLANTS
      ************************        *********************************
     OCT 15 TP APR 15 =  3.36           OPPO             1.11     1.25
     APR 15 TO JULY 1 =  4.00
     JULY 1 TO SEPT 1 =  1.95
     SEPT 1 TO OCT 15 =  1.25
     SEASON LONG TOTAL= 10.56
     LONG TERM AVERAGE=  9.52

                         TOTAL SHRUB PRODUCTION =        1.11     1.25


                              TOTAL PRODUCTION =  569.50   638.41
                              ***********************************
```

```
2010.   TWO MILE H     8 JULY     1981        OUT NATIV

                       NUMBER OF PLOTS = 20
                          PLOT SIZE 1X10
 PLANT    PLANT    AVE.   1X1    TOTAL    AVE.    WGT./    LBS    KGS
 CODE     NAME     PER-   ABS.   WGT.     WGT.    UNIT     PER    PER
                   CENT   PLOT   GMS/20   /PLOT   COVER    ACRE   HA.
                   COVER  FREQ.  SQ.FT.   OCCUR-  AREA
                   AREA   BASE            RENCES
                          20
**************************************************************************
  6  SHRUBS
       ATGA        6.33    19.   24.09    1.20     .19    128.52  144.07
       OPPO         .01     1.
  3  PER GRASS
       AGSM         .41     9.  114.16    5.71   13.96     42.25   47.36
       POSE         .12     9.     .94     .05     .41       .50     .56
       SIHY         .12    13.    5.61     .28    2.35      2.99    3.35
       ORHY         .05     5.    2.34     .12    2.44      1.25    1.40
                  TOTAL PERENNIAL GRASS PRODUCTION =       46.99   52.68
  2  PER FORBS
       CAMI         .00     1.
       MACA         .01     3.
       MAGL         .40     8.
       OECO         .00     1.
       VINU         .02     3.
              PERENNIAL FORBS =  23.90    1.20    2.79     12.75   14.29
  5  ANN GRASS
       BRJA         .00     1.
                 ANNUAL GRASSES =   .01     .00     .50       .01     .01
  4  ANN FORBS
       LEPE         .21    14.
       MONU         .00     1.
                  ANNUAL FORBS =  2.14     .11     .52      1.14    1.28

         ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION =         189.41  212.33


   PRECIPITATION DATA                  PRODUCTION ESTIMATES OF SHRUBS
   RAIN GAUGE                          AND WOODY MAT FORM PLANTS
 *************************             ***********************************
  OCT 15 TP APR 15 = 3.36                ARTR                 13.08   14.66
  APR 15 TO JULY 1 = 4.00
  JULY 1 TO SEPT 1 = 1.95
  SEPT 1 TO OCT 15 = 1.25
  SEASON LONG TOTAL= 10.56
  LONG TERM AVERAGE= 9.52

 ************************* TOTAL SHRUB PRODUCTION =        13,08   14.66
  Production weight elements
  for the out native are
  compiled from 1x10 plot
  numbers 11 through 20.          TOTAL PRODUCTION =       202.49  226.99
                                  ************************************
 1006.   UPPER GOV   12 AUGUST     1981      IN NAT

                 NUMBER OF PLOTS = 20
                   PLOT SIZE 1X1
PLANT   PLANT   AVE.   1X1    TOTAL   AVE.    WGT./   LBS     KGS
CODE    NAME    PER-   ABS.   WGT.    WGT.    UNIT    PER     PER
                CENT   PLOT   GMS/20  /PLOT   COVER   ACRE    HA.
                COVER  FREQ.  SQ.FT.  OCCUR-  AREA
                AREA   BASE           RENCES
                       20
***************************************************************************
  6  SHRUBS
       ARTR       8.38    10.
       OPPO        .05     1.
       PHHO       1.08     9.
  3  PER GRASS
       AGSM        .61    20.   10.25     .51     .83   49.21    55.16
       KOCR       2.62    15.   35.51    1.78     .68  170.50   191.13
       POSE       1.32    17.    7.89     .39     .30   37.88    42.46
       STCO        .19     2.     .68     .03     .18    3.26     3.65
            TOTAL PERENNIAL GRASS PRODUCTION =  260.85   292.41
  2  PER FORBS
       ERPU        .02     1.
       VIAM        .05     4.
          PERENNIAL FORBS =      .56     .03     .47    2.68     3.00

        ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION =  263.53   295.42


  PRECIPITATION DATA                   PRODUCTION ESTIMATES OF SHRUBS
  RAIN GAUGE                           AND WOODY MAT FORM PLANTS
************************               ********************************
 OCT 15 TP APR 15 =  3.28                ARTR          140.78   157.81
 APR 15 TO JULY 1 =  3.94                OPPO             .37      .42
 JULY 1 TO SEPT 1 =  1.30
 SEPT 1 TO OCT 15 =   .90
 SEASON LONG TOTAL=  9.42
 LONG TERM AVERAGE=  9.26

                   TOTAL SHRUB PRODUCTION =  141.15   158.23


                       TOTAL PRODUCTION =  404.68   453.65
                       ************************************
  1006.    UPPER GOV    12 AUGUST     1981      OUT NAT

                     NUMBER OF PLOTS = 20
                       PLOT SIZE 1X1
PLANT   PLANT   AVE.   1X1    TOTAL   AVE.    WGT./   LBS   KGS
CODE    NAME    PER-   ABS.   WGT.    WGT.    UNIT    PER   PER
                CENT   PLOT   GMS/20  /PLOT   COVER   ACRE  HA.
                COVER  FREQ.  SQ.FT.  OCCUR-  AREA
                AREA   BASE           RENCES
                       20
***********************************************************************
   6  SHRUBS
        ARTR     14.45     12.
        OPPO       .25      1.
        PHHO       .19      3.
   3  PER GRASS
        AGSM       .43    17.   6.73    .34    .78  32.31   36.22
        KOCR      1.03    15.   6.01    .30    .29  28.85   32.34
        POSE      2.83    19.  13.75    .69    .24  66.02   74.01
                TOTAL PERENNIAL GRASS PRODUCTION = 127.18  142.57
   2  PER FORBS
        SPCO       .07    10.
        VIAM       .01     1.
            PERENNIAL FORBS =   1.00    .05    .71   4.80    5.38
   4  ANN FORBS
        PLPA       .01     1.
               ANNUAL FORBS =    .02    .00    .20    .09     .10

          ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 132.07  148.05


     PRECIPITATION DATA            PRODUCTION ESTIMATES OF SHRUBS
     RAIN GAUGE                    AND WOODY MAT FORM PLANTS
   ***********************         *******************************
    OCT 15 TP APR 15 = 3.28          ARTR          201.11  225.45
    APR 15 TO JULY 1 = 3.94          OPPO            5.01    5.62
    JULY 1 TO SEPT 1 = 1.30
    SEPT 1 TO OCT 15 =  .90
    SEASON LONG TOTAL= 9.42
    LONG TERM AVERAGE= 9.26

                         TOTAL SHRUB PRODUCTION =  206.13  231.07


                               TOTAL PRODUCTION =  338.20  379.12
                               **********************************
```

```
1006.    UPPER GOV    12 AUGUST    1981      IN SPRAY

                        NUMBER OF PLOTS = 20
                           PLOT SIZE 1X1
PLANT    PLANT    AVE.     1X1    TOTAL    AVE.    WGT./   LBS    KGS
CODE     NAME     PER-     ABS.   WGT.     WGT.    UNIT    PER    PER
                  CENT     PLOT   GMS/20   /PLOT   COVER   ACRE   HA.
                  COVER    FREQ.  SQ.FT.   OCCUR-  AREA
                  AREA     BASE            RENCES
                           20
*****************************************************************************
  6  SHRUBS
       ARTR        6.43     11.
       PHHO         .15      1.
  3  PER GRASS
       AGSM         .43     17.    8.96     .45    1.04   43.02    48.23
       KOCR        2.16     16.   47.08    2.35    1.09  226.06   253.41
       POSE        1.48     19.   11.00     .55     .37   52.81    59.20
       STCO         .21      6.   18.26     .91    4.35   87.67    98.28
                  TOTAL PERENNIAL GRASS PRODUCTION = 409.56   459.12
  2  PER FORBS
       ASPU         .03      1.
       LASE         .01      1.
       SPCO         .01      1.
              PERENNIAL FORBS =    1.02     .05    1.13    4.89     5.48
  5  ANN GRASS
       BRTE         .02      3.
               ANNUAL GRASSES =     .07     .00     .23     .33      .37
  4  ANN FORBS
       ANSE         .01      1.
       MIGR         .04      6.
       PLPA         .01      2.
                 ANNUAL FORBS =     .25     .01     .23    1.20     1.35

             ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 415.98   466.31


   PRECIPITATION DATA                     PRODUCTION ESTIMATES OF SHRUBS
   RAIN GAUGE                             AND WOODY MAT FORM PLANTS
  ************************                *******************************
   OCT 15 TP APR 15 =  3.28                 ARTR               32.77    36.74
   APR 15 TO JULY 1 =  3.94                 OPPO                 .74      .83
   JULY 1 TO SEPT 1 =  1.30
   SEPT 1 TO OCT 15 =   .90
   SEASON LONG TOTAL=  9.42
   LONG TERM AVERAGE=  9.26

                              TOTAL SHRUB PRODUCTION =    33.52    37.57


                                    TOTAL PRODUCTION =  449.50   503.89
                                    **********************************
```

```
1006.    UPPER GOV    12 AUGUST    1981    OUT SPRAY

                        NUMBER OF PLOTS = 20
                          PLOT SIZE 1X1
PLANT    PLANT    AVE.    1X1     TOTAL    AVE.     WGT./    LBS     KGS
CODE     NAME     PER-    ABS.    WGT.     WGT.     UNIT     PER     PER
                  CENT    PLOT    GMS/20   /PLOT    COVER    ACRE    HA.
                  COVER   FREQ.   SQ.FT.   OCCUR-   AREA
                  AREA    BASE             RENCES
                          20
**************************************************************************
   6  SHRUBS
        ARTR         .73     4.
        PHHO         .60     3.
   3  PER GRASS
        AGSM         .73    20.    9.06     .45      .62   43.50    48.76
        KOCR        2.00     9.    2.32     .12      .06   11.13    12.48
        POSE        3.26    19.   13.78     .69      .21   66.16    74.17
                  TOTAL PERENNIAL GRASS PRODUCTION = 120.79   135.41
   2  PER FORBS
        SPCO         .08     6.
             PERENNIAL FORBS =      .99     .05      .62    4.75     5.32
   4  ANN FORBS
        DEPI         .01     1.
        PLPA         .20    13.
                 ANNUAL FORBS =    1.30     .07      .32    6.24     7.00

           ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 131.78   147.73


     PRECIPITATION DATA                PRODUCTION ESTIMATES OF SHRUBS
      RAIN GAUGE                       AND WOODY MAT FORM PLANTS
     ************************          ********************************
     OCT 15 TP APR 15 = 3.28             ARTR                71.51    80.16
     APR 15 TO JULY 1 = 3.94             OPPO                 3.53     3.96
     JULY 1 TO SEPT 1 = 1.30
     SEPT 1 TO OCT 15 =  .90
     SEASON LONG TOTAL= 9.42
     LONG TERM AVERAGE= 9.26

                           TOTAL SHRUB PRODUCTION =     75.04    84.11


                                 TOTAL PRODUCTION =  206.82   231.84
                                 ********************************
```

```
 2006.   W.PASTURE        7 JULY    1982       IN NATIVE

                         NUMBER OF PLOTS = 20
                         PLOT SIZE 1X10
PLANT    PLANT    AVE.   1X1     TOTAL    AVE.    WGT./   LBS     KGS
CODE     NAME     PER-   ABS.    WGT.     WGT.    UNIT    PER     PER
                  CENT   PLOT    GMS/20   /PLOT   COVER   ACRE    HA.
                  COVER  FREQ.   SQ.FT.   OCCUR-  AREA
                  AREA   BASE             RENCES
                         20
**************************************************************************
  6  SHRUBS
       ARPE        1.19      8.
       ARSP        5.00     20.
       ATGA        2.51     19.   16.02     .80     .32   76.92   86.23
       OPPO         .64      7.
  3  PER GRASS
       BOGR         .01      1.     .09     .00     .45     .43     .48
       ORHY         .84     19.   27.93    1.40    1.66  134.11  150.34
       POSE         .24     19.    3.23     .16     .67   15.50   17.38
       SIHY         .53     20.    5.56     .28     .52   26.69   29.92
       SPCR         .04      4.     .47     .02     .66    2.25    2.52
                  TOTAL PERENNIAL GRASS PRODUCTION = 178.98  200.64
  2  PER FORBS
       ALTE         .03     15.
       ASPU         .00      1.
       CYMO         .04     13.
              PERENNIAL FORBS =     .78     .04     .64    3.74    4.19
  4  ANN FORBS
       LARE         .00      2.
       LEDE         .00      6.
       MATA         .02     12.
       PLPA         .01     11.
                 ANNUAL FORBS =     .76     .04    1.21    3.64    4.08

             ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 263.28  295.14


   PRECIPITATION DATA                PRODUCTION ESTIMATES OF SHRUBS
   RAIN GAUGE                        AND WOODY MAT FORM PLANTS
 ************************           ******************************
  OCT 15 TP APR 15 =  1.20            ARPE               64.65   72.47
  APR 15 TO JULY 1 =  3.97            ARSP               12.12   13.58
  JULY 1 TO SEPT 1 =   .30            OPPO               32.04   35.91
  SEPT 1 TO OCT 15 =   .44
  SEASON LONG TOTAL=  5.91
  LONG TERM AVERAGE=  5.72

                          TOTAL SHRUB PRODUCTION =  108.80  121.97


                               TOTAL PRODUCTION =  372.08  417.11
                               ***********************************
 2006.   W.PASTURE       7 JULY        1981      OUT NATIVE

                      NUMBER OF PLOTS = 20
                        PLOT SIZE 1X10
PLANT    PLANT    AVE.   1X1     TOTAL    AVE.     WGT./    LBS    KGS
CODE     NAME     PER-   ABS.    WGT.     WGT.     UNIT     PER    PER
                  CENT   PLOT    GMS/20   /PLOT    COVER    ACRE   HA.
                  COVER  FREQ.   SQ.FT.   OCCUR-   AREA
                  AREA   BASE             RENCES
                         20
*************************************************************************
  6  SHRUBS
       ARPE        .02      1.
       ARSP       5.25     20.
       ATGA       2.50     20.   17.90      .89      .36   85.95    96.35
       OPPO        .69     14.
  3  PER GRASS
       BOGR        .01      1.     .07      .00      .70     .33      .37
       ORHY        .38     20.   10.79      .54     1.41   51.81    58.08
       POSE        .37     18.    6.15      .31      .83   29.53    33.10
       SIHY        .52     20.    6.52      .33      .63   31.30    35.09
       SPCR        .41     16.    5.37      .27      .65   25.78    28.90
       STCO        .00      1.     .01      .00      .33     .04      .04
                  TOTAL PERENNIAL GRASS PRODUCTION = 138.79   155.58
  2  PER FORBS
       ALTE        .00      4.
       CYMO        .01     12.
             PERENNIAL FORBS =     .55      .03     2.04    2.64     2.96
  4  ANN FORBS
       DEPI        .00      1.
       LARE        .01      1.
       LEDE        .00      2.
       MATA        .08     17.
       ORFA        .00      1.
       PLPA        .03     15.
                 ANNUAL FORBS =   2.48      .12     1.06   11.90    13.34

           ANNUAL HERBACEOUS(NON-WOODY)PRODUCTION = 239.28   268.23


      PRECIPITATION DATA                PRODUCTION ESTIMATES OF SHRUBS
      RAIN GAUGE                        AND WOODY MAT FORM PLANTS
    ************************            ********************************
     OCT 15 TP APR 15 = 1.20              ARPE            236.87   265.53
     APR 15 TO JULY 1 = 3.07              ARSP              1.00     1.12
     JULY 1 TO SEPT 1 =  .30              OPPO             17.24    19.32
     SEPT 1 TO OCT 15 =  .44
     SEASON LONG TOTAL= 5.91
     LONG TERM AVERAGE= 5.72

                           TOTAL SHRUB PRODUCTION =  255.10   285.97


                                 TOTAL PRODUCTION =  494.38   554.20
                                 ************************************
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(June 1984)

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